INVEST FOR SUCCESS
As part of its overhaul, Coke bought out bottlers lacking in technology, installed systems where needed, then resold the bottlers. Page 4

ESPIONAGE TOOLS
QuickStudy: How to get the lowdown on a competitor. Page 53

WEB SITE MAKEOVER
Test early, keep tweaking and tell customers what they need. That's what QuickenLoans.com learned. Page 64

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COMPUTERWORLD

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SUN STRIVES TO UNDERCUT LINUX

Unix vendor is forced to give away Solaris 8.0 and 'open' source code in bid to stall Linux gains

BY ROBIN ROBINSON

In what analysts said was an effort to contain market share gains made by Linux, Sun Microsystems Inc. last week announced that its Solaris 8.0 operating system will be free on servers with up to eight processors when it ships March 5.

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LESICA: Architecture is becoming "boundaryless"

In addition, Sun "opened" the source code to its flagship operating system, but semantics played a part in the announcement. The source code will be available under Sun's "community source license," meaning it can't be altered. And when developers use and distribute the source code as part of a commercial application, they must negotiate a licensing fee with Sun.

Linux, meanwhile, is distributed under a license that doesn't require royalties and lets vendors modify source code.

One corporate user said there was no other way for Sun to go.

"The Internet is almost forcing a boundaryless architecture," said Tom Lesica, CIO at J. Crew Group Inc. in New York. "If you can avoid being forced into a proprietary footprint, there's merit to that, especially in dot-coms."

"I think they're trying to appeal to those folks that are on the fence [between Sun and Linux]," said Doug Hibberd, chief technology officer at iMark.com Inc., an Austin, Texas-based online broker of used industrial equipment.

Sun isn't the only Unix ven-

Sun, page 16

GARY LAUFMAN

RANDY KATZ (left) and John Kubiatowicz at the University of California at Berkeley are among the researchers charting a course for the post-PC era, when computers will be everywhere, always on and yet invisible – like electricity

SAP TAPS USERS TO BUILD SOFTWARE

Firms get near-custom industry applications

BY CRAIG STEDMAN

SAP AG is hiring a boatload of developers as it tries to catch up to more nimble vendors in application areas such as e-commerce and customer relationship management. But increasingly, it's also turning to key R/3 users for help.

In the past six months, SAP has quietly set up a series of joint development projects with individual customers in various industries. Teams from SAP and the customers are

SAP, page 14

JUST THE FACTS

Catching Up

What's at stake: SAP was slow to develop new applications for uses such as e-commerce and customer relationship management and is now trying to catch up to rivals such as Oracle and Siebel Systems.

What that means: SAP's revenue in the U.S. and other countries in the Americas grew only 7% last year as many users shifted their priorities from back-office systems to Internet applications.

What SAP is doing: The German vendor has increased the size of its development organization by nearly 15% this month and is signing up individual users to work on joint development projects.

DOT-COMS SEEK SYNERGY WITH RETAIL PARENTS

Links to store, catalog systems remain rare

BY CAROL SLIWA
SAN FRANCISCO

Dot-com upstarts this year will increasingly try to integrate their online operations with the brick-and-mortar and catalog channels of their retail parents to present one face to their customers, analysts said.

"We started seeing the revenge of the brick-and-mortars the last holiday season. Now they're actually going to turn their presence into a real advantage. But it's really hard to integrate a new channel with

Integrate, page 89

R&D GEMS

GARY H. ANTHES set off to find the coolest IT research projects at the nation's universities and discovered eye-opening technologies that are surprisingly close to being ready for corporate America. For example, there's Legion, a wide-area operating system that builds a "worldwide virtual computer" from millions of distributed hosts that have some cycles to spare. Other exciting projects include a data storage utility for "nomadic data access" and "smart offices" that adapt to the preferences of whoever enters the room.

Story begins on page 62.

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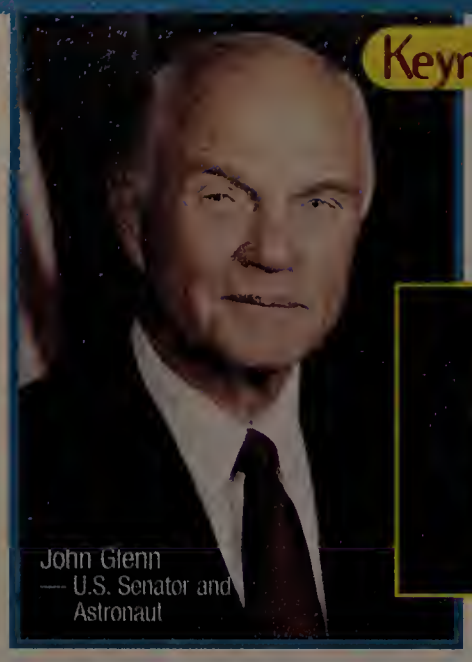
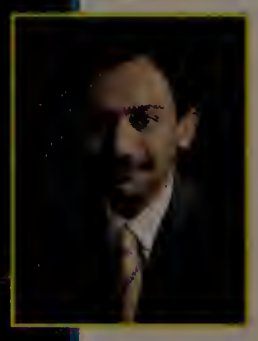


Keynote Addresses And Panel Discussions



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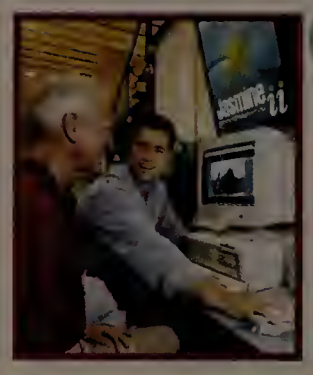

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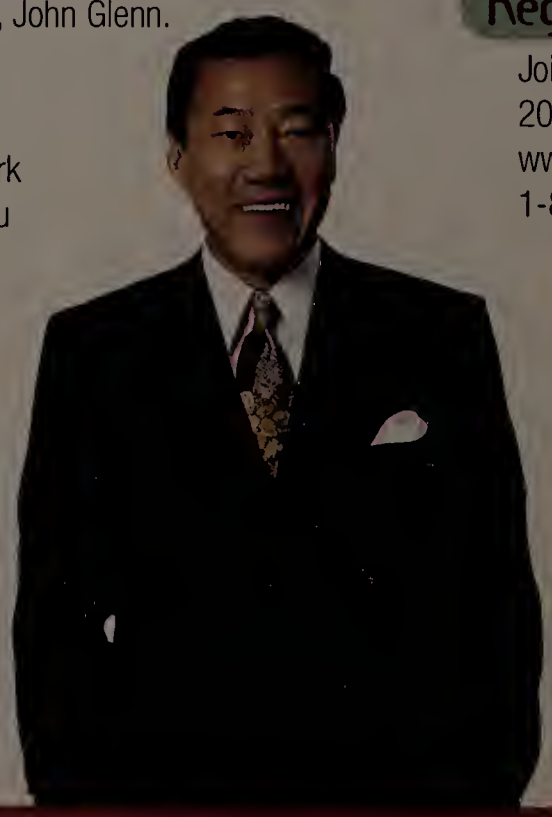

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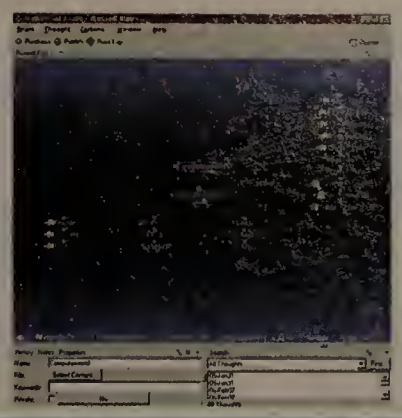
JACK FOLEY

A DAY IN THE LIFE OF A CONSULTANT

If you're toying with the idea of going it alone as an IT consultant, consider Martin Eyllon's typical day – his work, his clients and his business challenges – to see whether this independent lifestyle is for you. Page 50



LINKING YOUR THINKING

This is what your ideas would look like if they were dropped into The Brain, a visual modeling tool for linking and organizing concepts and information. We take a Hands On look at it. Page 60

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"THIS IS LIKE SPINNING WHEELS IN MUD. IT'S A STUPID WAY FOR SOCIETY TO BE OPERATING."

NILS VICTOR MONTAN, INTELLECTUAL PROPERTY COUNSEL AT WARNER BROTHERS, ON THE NEED TO CONTINUALLY DEFEND THE COMPANY'S TRADEMARKS FROM CYBERSQUATTERS. SEE PAGE 4.

OPINIONS

36 MARK HALL says breaking up Microsoft would not only be a foolish thing to do — it would also be an abuse of government power.

36 DON TAPSCOTT thinks the new Crusoe chips may be the catalyst for tomorrow's world of corporate computing and not only with PCs.

37 MICHAEL CUSUMANO says handing off the CEO job to Steve Ballmer is a good move by Bill Gates, and a big boost for Microsoft.

38 LENNY LIEBMANN predicts the next "critical" IT skill will be not only building, but scaling up e-commerce sites.

38 CATHY HOTKA at the National Retail Federation expects alliances between retailers and Internet companies to be common, almost required.

43 KEVIN FOGARTY recommends staving off dot-coms that raid your staff and market by becoming one yourself, complete with stock options.

48 JIM CHAMPY warns that soaring buzz about tech could remove the checks on ambition and distract a company from what makes it successful.

AT DEADLINE

E-Bank Security Break Incites Policy Debate

X.com, a Palo Alto, Calif.-based online banking service, acknowledged Friday that customers were able to transfer funds from any U.S. bank account and then withdraw money with only the account and bank routing numbers, which appear on checks. The company says at least one person tried to beat the system by entering other people's account information, but no money was stolen. While X.com says it now requires users to send in a voided check and a card verifying their signature, critics allege additional accounts were compromised.

U.S. Ups Tech Funds

The White House budget for the next fiscal year calls for a $227 million, 84% increase in government investment in nanotechnology research and development. That would raise total spending from $270 million to $497 million. Nanotechnology involves the development of things like semiconductors at a molecular level of about a billionth of a meter – extraordinarily tiny sizes. Most of the new funding would go to university-based research.

Wall Street Execs Move Up

The Chase Manhattan Bank last week named former CIO Denis O'Leary, 43, to oversee the day-to-day operations of Chase.com. At Merrill Lynch, John McKinley, 42, senior vice president and chief technology officer, has been promoted to executive vice president. Meanwhile, Peter Cherasia has been named Bear, Stearns & Co.'s CIO and director of its new e-commerce division.

Win 2K Security Patch

Microsoft Corp. last week released the first security patch for its Windows 2000 operating system which is still weeks away from its official release. The patch corrects two problems in the Microsoft Index Server, a file search engine included in Windows 2000. The bugs allow an intruder to view files on a Web server and reveal the location of Web directories on the server.

Companies Bemoan Domain Quicksand

.shop, etc. would add to trademark battles

BY PATRICK THIBODEAU

COMPANIES acting already to protect their trademarks from cybersquatters through such means as registering versions of their company names that have misspellings or dashes may soon have to do a lot more.

The Internet Corporation for Assigned Names and Numbers (ICANN), based in Marina del Rey, Calif., is considering increasing the number of top-level domains, expanding the .com, .net and .org to potentially include a .biz or .shop plus dozens more. The group plans to discuss this issue at its March meeting in Cairo.

The prospect of having even more domains to protect worries Nils Victor Montan, vice president and senior intellectual property counsel at Warner Brothers Inc. in Burbank, Calif.

Warner Brothers is already sending out more than 100 letters each week to cybersquatters who have registered variations of the company's movie, book and recording trademarks. And the new federal cybersquatting law doesn't seem to be a deterrent.

"There is no benefit to any of this — people register these domain names, you chase them down, you have to write them letters," Montan said. "This is like spinning wheels in mud. It's a stupid way for society to be operating."

Cybersquatting has continued, despite some relatively new ways for companies to protect their trademarks. Cybersquatters risk penalties of up to $100,000 under a law Congress passed last fall. Additionally, there's an administrative procedure run by the World Intellectual Property Organization in Geneva that can settle a dispute and revoke a domain name. It currently has about 20 cases before it.

The law favors trademark holders, but the number of possible domains makes protection difficult. There are some 220 top-level domains, many of them country-specific. And there's now the ability to register 63-character domains, up from 22 characters, plus the top-level domain.

Chicago-based Britannica.com Inc. recently had its trademark — Encyclopaedia Britannica — registered as one long domain name by someone in Australia. And it wasn't the first time someone had registered a variation of the name.

Keith McDonnell, the assistant general counsel at Britannica, says he wishes registrars did more to protect famous trademarks. "It's easier [for registrars] to just hand them out and let trademark owners spend the money" to get them back, he noted.

The addition of new top-level domains opens up the possibility that there might be the domain-name equivalent of an Oklahoma land rush, as people race to register business.shop or something like it.

Preferential Treatment

ICANN is considering proposals to prevent that from happening, such as giving famous-name trademark and domain holders preference, said ICANN general counsel Louis Touton.

"While the first come, first served is a convenient rule in an ongoing process, it may not be a good rule when you are opening up a new domain," Touton said.

The threat of new domains didn't stop Jake Winebaum's venture capital company, eCompanies LLC, from paying $7.5 million for business.com, a generic domain that can't be trademarked.

But Winebaum says he believes "the .com domain is the domain the user goes to first, and that will not change in the foreseeable future, no matter how many new domains are opened up."

Domain Game

Trademark protection is getting more difficult in cyberspace:

- There are 14 million domains registered worldwide, including 8.5 million .com domains.
- Most domains are country-specific. Discussions are under way to increase the number of generic domains, .com, .net, and .org. Suggestions include: .web, .shop, .firm, .biz, .law, .arts, .rec, .firm, among others.
- New laws and regulations make it easier for trademark holders to wrest control of a domain, but the laws aren't deterring cybersquatters from registering what they want.

IT Projects Part of Coca-Cola Realignment

6,000 posts cut; most IT jobs to survive

BY STACY COLLETT

The Coca-Cola Co.'s technology investment in hundreds of bottling franchises has made the bottlers more independent than ever, according to industry observers.

That independence played a small part in the soft-drink icon's massive realignment, which will cost 6,000 jobs and reduce annual expenses by $300 million.

The Atlanta-based company announced the restructuring last week, saying the move would give more responsibility and accountability to local business units in 200 countries.

"We've spent years building the brands, infrastructure and technology needed to be successful at the local level," said Doug Daft, president and chief operating officer of Coca-Cola, in a statement.

Officials wouldn't elaborate on the realignment. But those familiar with the situation said that during the past decade, Coca-Cola has purchased bottling franchises where the original owners hadn't invested much in technology or distribution infrastructure.

Automated Systems

Coca-Cola would install automated inventory systems or automated sales-tracking systems — handheld computers for route drivers, for example — and then resell the bottler as a franchise.

Bottlers buy Coke's concentrated syrup from the company and then add sugar or artificial sweeteners and water. Then they package and distribute the soft drink.

The company also invested in management training in countries like Russia, China and India and beefed up its Atlanta staff to handle training abroad.

"Now that process is over," said Bryan Spillane, an analyst at Warburg Dillon Read LLC in New York.

The company plans to cut some 2,500 jobs in Atlanta, 800 in other U.S. locations and 2,700 jobs abroad. Spokesman Rafael Fernandez said "virtually all areas of the company are going to be affected" by the layoffs.

George Thompson, an analyst at Prudential Securities Inc. in New York, said he expects most information technology staff to be spared.

"Big bottling entities [are] very technologically oriented," Thompson said. "I'd be very surprised if there were significant cuts there."

MOREONLINE

For more coverage of domain names and links to related pages, visit our Web site.
www.computerworld.com/more

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Compaq's Effort to Integrate Digital Moves Ahead Slowly

Company struggling with sluggish growth, muddled platforms 18 months later

BY JAIKUMAR VIJAYAN AND MATT HAMBLEN

HEADED in the right direction but not quite there yet: Eighteen months after Compaq Computer Corp. purchased Digital Equipment Corp., users and analysts say the Houston company is making progress in integrating the two businesses.

But Compaq still needs to address several problems, including a commercial PC business that's bleeding money, sluggish revenue growth and a high-end server strategy muddled with multiple operating systems and hardware platforms.

"Compaq, at a corporate level, still doesn't know what it wants to be now that it's all grown up," said Joyce Becknell, an analyst at Aberdeen Group Inc. in Boston.

"They want to be recognized as the leading seller of home PCs, Internet-connected PCs, Wintel servers and also [high-end] corporate servers. . . . No one has ever done that," said Joseph B. Gurman, an Alpha server user and a scientist at NASA's Goddard Space Flight Center in Greenbelt, Md.

Compaq last week announced fourth-quarter 1999 profits of $332 million on revenue of $10.5 billion.

The numbers were better than Wall Street estimates but couldn't conceal revenue and profit-margin dips in many crucial businesses.

At $3.1 billion, revenue for Compaq's commercial personal computing group was down 19% from the fourth quarter of 1998. The group — which accounts for about 30% of the company's revenue — reported a $79 million operating loss for the fourth quarter of 1999.

Similarly, sales of Compaq's enterprise server products were $3.5 billion, down 5% from a year ago. Revenue from Compaq's Enterprise Solutions and Services Group — which houses most of the technologies acquired from Digital and Tandem Computers Inc. — was down 3%.

Roger Kay, a desktop analyst at International Data Corp. in Framingham, Mass., said Compaq's commercial desktop business took a battering not only in the fourth quarter but also for much of 1999, going back to former CEO Eckhard Pfeiffer's final months.

Pfeiffer's replacement, Michael Capellas, said the company took "aggressive action" in the second half of 1999, but he acknowledged that more work is needed to grow revenue and profit margins once again.

Distinguishing Characteristics

Meanwhile, Compaq's continuing struggle on the high-end server side has been to clearly differentiate its various indigenous technologies and those it inherited through acquisitions, such as Digital's Alpha and OpenVMS and Tandem's Himalaya and NonStop Kernel technologies, according to analysts.

Yet many of the early fears related to Compaq's long-term commitment to these technologies have been calmed, said Marshall Peterson, a director of infrastructure technologies at Celera Genomics Inc., a large Alpha server customer in Rockville, Md.

Compaq Results

Period ended Dec. 31

	1999	1998
REVENUE	$10.5B	$10.9B
NET INCOME	$332M	$758M

Technologies like Alpha are also clearly benefiting from an infusion of cash and marketing that seemed to be lacking during the Digital days, Peterson said.

"I am impressed with Compaq's commitment to the continued development of OpenVMS, which they seem to realize — better than Digital — is a cash cow," Gurman added.

Compaq has been making great strides in improving service, support and technical enhancements for Digital Unix (now called Tru64 Unix), said Kal Raman, CIO at online pharmacy Drugstore.com Inc., a major customer of Compaq's high-end Unix server technologies.

"What I would really like Compaq to improve is their Windows NT service," which has been lacking compared with service on the enterprise server side, Raman added.

MORE THIS ISSUE

Y2K and Asian earthquakes hurt PC vendors' fourth-quarter earnings. **See page 12.**

New Online Payment Options Emerging

BY STACY COLLETT

About 95% of all online purchases were made with credit cards last year. But that could change as software developers and electronic payment services unveil a variety of new payment options.

People who make small online purchases — such as buying one song from a CD — will soon be able to have the transactions show up on their monthly Internet service or phone bills. The service, to be launched in the next quarter, is being developed by online payment firms Qpass Inc. in Seattle and Trivnet Inc. in Saratoga, Calif.

After registering, shoppers can purchase items from any Qpass merchant partner without using a credit card.

Such micropayment services are important because inexpensive purchases can cost more to process on credit cards than the purchases themselves, said Charles King, an analyst at Zona Research Inc. in Redwood City, Calif.

Micropayments are already popular in Europe, where credit cards aren't as widely accepted as in the U.S., he said.

"About 12% of purchases in the physical world are less than $10. There's reason to believe you can approach that figure on the Internet," said Ken Kerr, an analyst at Gartner Group Inc. in Durham, N.C.

Another payment option is being developed by eCharge Corp. in Seattle and Electronic Data Systems Corp. in Plano, Texas. The two companies are planning an untraceable "electronic cash" transfer service.

The eCharge service, slated to start later this year, will let people set up prepaid accounts similar to checking or debit-card accounts and draw upon them for online purchases. People can also open credit accounts with eCharge.

Last week, San Jose-based CyberSource Corp. added electronic-check services to its online payment options. Officials said electronic-check fees are lower than the fees for online credit-card transactions.

So, what's wrong with credit cards? Analysts said the 183 million people expected to be shopping online in 2003 will want to have a wide variety of payment options to suit their personal preferences and the type of transaction being made.

A recent study by New York-based Jupiter Communications Inc. showed that 65% of online shoppers would continue to use credit cards (see chart). But 13% said they would prefer to use electronic cash, 13% said they would rather have money withdrawn from a checking account and 8% said they preferred automated teller machines or debit cards.

"In the off-line world, people use different payment methods in different circumstances," said Jupiter analyst Robert Sterling. "As online matures, we expect to see that same sort of thing happening."

Payment Preferences

Consumer preferences for paying online, assuming equal ease of use:

65%	Credit card
13%	Electronic cash
13%	Checking withdrawal
8%	ATM or debit card

BASE: SURVEY OF 1,863 CONSUMERS SUMMER 1999. PERCENTAGES DON'T ADD UP TO 100% DUE TO ROUNDING

SOURCE: JUPITER COMMUNICATIONS INC., NEW YORK

Visa Reveals July Break-ins

BY ANN HARRISON

Visa International Inc. revealed last week that computer crackers broke into several servers in its global network last July and stole information. The company said that in December it received a phone call and an e-mail demanding money in exchange for the data.

The San Francisco company said no credit-card numbers or consumer information was compromised and that only outdated marketing material was involved.

Kristina Scott, a spokeswoman for Visa, said the company took steps in July to seal off vulnerable servers in the U.K. and notified authorities about the extortion demands, which may have come from an organized group of computer crackers.

Scott said the company took other security steps after the break-in, including installing additional intrusion-detection systems, and analyzed millions of lines of system logs to try to understand how the crackers gained access. She said Visa also advised its operations centers to reset all account passwords possibly affected and brought in an outside security firm to conduct a network threat assessment.

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BRIEFS

No Plans to Use Net

Although the number of Internet users is growing, 37% of Americans (about 75 million) don't intend to use the Internet at all, according to a study by Zona Research Inc. in Redwood City, Calif.

Of those who said they will eschew the Internet, three-fourths received a high school education or less, 71% are older than 45, more than half are women and 60% earn $35,000 or less per year.

Group: Split Microsoft Into Four Companies

A conservative Washington think tank has come up with a novel remedy for Microsoft Corp. if the company loses its antitrust case.

The Progress & Freedom Foundation has proposed splitting the operating system component of Microsoft into three separate companies. This split "would immediately replace monopoly with competition in the market for operating systems," the foundation said.

The fourth company created under the foundation's proposal would be devoted to applications.

Computer Crackers Hit Japanese Sites

Computer crackers shut down several Japanese government Web sites last week, including those of the Management and Coordination Agency and the National Institute for Research Advancement. The attacks followed a controversial meeting on the massacre of Chinese civilians by the Japanese military in 1937. Several of the compromised sites contained Chinese text condemning the action.

Flood of Queries

Since 1973, First American Flood Data Services in Austin, Texas, has provided flood-certification data via dial-up connections to financial institutions seeking information prior to mortgage approval. It has ported its application to the Web using the services of the Net Quotient Consulting Group in New York. According to First American, more than 13% of its 10,000 inquiries per week are received via the Internet.

Chase, InfoBeat to Stop Sharing Customer Data

Third parties cut out in settlement with N.Y. attorney general; privacy groups cheer

BY LINDA ROSENCRANCE

AT A TIME WHEN consumers and privacy advocates are calling for more stringent online privacy regulations, two companies last week settled pending litigation by agreeing to stop sharing customer information with third parties. Neither company admitted wrongdoing, though.

Under a settlement with the New York attorney general's office, The Chase Manhattan Bank in New York agreed to stop sharing detailed financial information about its credit-card customers with telemarketers and advertisers. Bank officials also agreed not to share the names, addresses and telephone numbers of customers without first notifying those customers.

In a separate settlement, Denver-based online newsletter InfoBeat Inc., a subsidiary of Sony Music Entertainment Inc., also agreed to not disclose personal information about its customers to third parties.

Neither company admitted doing anything wrong, but both agreed to cover the costs of their respective investigations. InfoBeat will pay the state $75,000 and Chase will pay $101,500.

Software Flaw

At InfoBeat, a software flaw in October inadvertently allowed advertisers to have access to subscribers' e-mail addresses, according to InfoBeat spokeswoman Liana Miller. She said the flaw was corrected as soon as it was discovered.

In Chase's case, the bank violated its own privacy regulations by providing customer information, including credit line and account balances, to third-party telemarketers, according to New York Attorney General Eliot Spitzer's office. The bank received a commission on each business transaction between the customer and the vendor, Spitzer said.

Chase said it was always in compliance with the law — such disclosures of confidential information aren't illegal — as well as with its own internal privacy policy.

Moratorium in Effect

"When the attorney general began his inquiry last summer, Chase had already put in effect a moratorium on releases to third parties," said Chase spokeswoman Judith Miller. "At that time, we were responding to an increased sensitivity to privacy issues, and after an extensive review we found we were in compliance with our internal privacy policy. We made some changes to reassure our customers and give them more of a choice [to allow their personal information to be shared with third parties]."

ELIOT SPITZER has a plan to expand privacy protections for New Yorkers

Consumer privacy advocates hailed Spitzer's decision to tackle such cases as a step in the right direction.

"We're pleased to see the attorney general take action in these cases . . . especially in the absence of activity [on this issue] in Washington," said Marc Rotenberg, executive director of the Electronic Privacy Information Center, a Washington-based privacy research group.

Russ Haven, legislative counsel at the New York Public Interest Research Group, said Spitzer's actions help shine a much-needed spotlight on the privacy issue.

Spitzer has crafted a seven-part legislative agenda aimed at expanding privacy protections for New Yorkers.

On the national level, Congress is considering legislation that would require Internet companies to give people the right to opt out of having information about them collected or shared with third parties. ◗

Healtheon Buy to Move EDI Claims to Net

$2.5B purchase of claims processor Envoy will add 1.5B transactions per year

BY JULEKHA DASH

Health care portal Healtheon/WebMD Corp. last week announced a $2.5 billion acquisition that will make it the largest processor of electronic health insurance claims in the private sector.

Healtheon said it will buy Envoy Corp., a health care transaction unit of Durham, N.C.-based Quintiles Transnational Corp., for $400,000 in cash and $2.1 billion in stock.

"Healtheon wants to be the first and best in automating the business of health care online," said Claudine Singer, an analyst at Jupiter Communications Inc. in New York.

Numerous Alliances

To reach that goal, Atlanta-based Healtheon has recently forged numerous high-profile alliances [News, Jan. 17]. The Envoy acquisition would enable it to process 2 billion transactions per year. Healtheon now processes one quarter of that amount.

"The number of transactions is critical. It's where [Healtheon] is going to make money," Singer said. Healtheon charges 15 to 50 cents per transaction.

Under the agreement, Healtheon will acquire Envoy's back-end network. Claims that were once processed as electronic data interchange (EDI) transactions on private networks will now be processed over the Internet.

AT A GLANCE

Healtheon/ Envoy Deal

- Healtheon/WebMD will pay **$2.5 billion** in stock and cash to Envoy's parent company, Quintiles Transnational.
- Quintiles will pay Healtheon up to **$100 million** to fund Web-based products and services over the next 18 months.
- Quintiles will have **exclusive rights** to Envoy and Healtheon transaction data (without patient identifications).
- Healtheon will receive some **revenue** from sales of Quintiles products that use this data.

Challenges Ahead

Incorporating Envoy's back-end infrastructure and claims processing could be a formidable challenge for Healtheon, said Steve Ditto, a consultant at First Consulting Group Inc. in Long Beach, Calif.

Envoy's current customers "are not doing transactions over the Internet; they're doing it over a proprietary network. How do you transfer that to the Internet in a secure, scalable fashion?" asked Ditto.

Pavan Nigam, Healtheon's chief technology officer, said the company is currently considering whether it needs to upgrade systems to accommodate the additional 1.5 billion transactions.

Healtheon said that Envoy's senior management will remain at Envoy's headquarters in Nashville. The deal will likely be completed in the first half of this year. ◗

ComNet: Telcos Add Self-Serve Management, ASP Services

BY JAMES COPE

Winter storms that interfered with ComNet 2000 attendance in Washington didn't stop big telecommunications companies from announcing services that signal their movement into areas that seem more like managed services and systems integration than typical telecommunications services.

MCI WorldCom Inc. introduced services that will allow data customers to self-manage bandwidth on Asynchronous Transfer Mode (ATM) systems and private lines from inside the enterprise, using a browser.

MCI WorldCom said subscribers will be able to dynamically manipulate and allocate bandwidth over ATM lines, and bring up and take down private lines from an in-house console. This will allow customers to get what they need when they need it, foregoing the cost of lines that are always live, the company said.

Analyst Tom Jenkins at Telechoice Inc. in Boston said the option is lucrative because businesses won't have to request changes, wait days for them to be made and then pay for the labor. But he added that network managers will have to determine how much optimization is necessary, because hiring staff to manage it would cut into potential savings.

MCI WorldCom also rolled out a service for centralized control of geographically dispersed corporate call centers. The system is based on intelligent call management software from San Jose-based Cisco Systems Inc., MCI WorldCom said. Implementation also includes deployment of Cisco's network application manager software.

J. C. Penney Co. in Plano, Texas, uses the Cisco intelligent call management package for its direct marketing operation, said Jeff Camp, vice president of customer service. "We're using its routing capabilities to balance the load across our three call centers and to match up callers with the best answering resource," Camp said.

Not wanting to be left behind, AT&T Corp. rolled out a line of services at ComNet that will enable application service providers (ASP) to deliver network-based applications.

The program, called Ecosystem for ASPs, offers hosted applications residing in AT&T's network. AT&T is pumping $250 million into its infrastructure for the program. Hopkinton, Mass.-based EMC Corp., Cisco, IBM, Novell Inc. and Sun Microsystems Inc. are some of the vendors that will provide storage systems and network-enabling and testing tools.

Jenkins said providers like AT&T are interested in the application service provider market because it gives them valuable knowledge of a customer's business as well as the promise of direct income.

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Online Car Market Revs Up

Used vehicles, parts to be traded on network

BY LEE COPELAND

HOPING TO MOTOR into the burgeoning automotive e-commerce market, a former distribution manager from Ford Motor Co. and two information technology firms last week unveiled a plan to create an online market for used vehicles and car dealers' supplies.

The online network at the Web site e401.com, called the Retail Auto Exchange, will focus on auctioning and selling previously leased and used vehicles from institutional sellers such as rental car agencies and finance companies. It will also offer auto dealers online procurement of parts, office supplies and equipment, as well as financing and customer relationship management services.

E-commerce software maker TradeX Technologies Inc. in Atlanta is involved in the deal. A subsidiary of Ariba Inc., TradeX has struck similar deals to develop trading networks with J. D. Edwards & Co. in Denver and American Express Co. in New York. The other firm, Needham, Mass.-based NerveWire Inc., is an IT services company.

Online trading networks typically charge users fees ranging from 1% to 15% of the transaction amount, plus membership and services fees.

John Burkey, the former Ford distribution manager who is now president of e401.com, said the participating dealers will pay a small commission on transactions but can expect savings of $300 to $500 per vehicle and 5% to 10% on commodities such as parts and office supplies. The Web site is a business unit of Philadelphia holding company LexbancAG Inc. The site should begin trading by the end of March, Burkey said. It will charge no registration or membership fees and will offer dealers free Internet access, e-mail and hosting services for dealer Web pages. More than 160 dealers have registered, he added, but he didn't name them.

A flood of online procurement, vehicle and parts exchanges has hit the automotive industry in recent months, including General Motors Corp.'s TradeXchange supplier network and Ford's AutoXchange online procurement system.

Analyst Daniel Garretson at Forrester Research Inc. in Boston said he expects to see more this year. "There is still a very open market for creating these exchanges, because these exchanges add a lot of value in most industries, if not all, by creating more efficiency," he said.

Forrester Research projects online trading in the automotive industry to jump from $23 billion this year to $213 billion in 2003. ◗

Business-to-Business

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Not All Retailers Rushing Online

Study finds only 35% doing e-commerce today

BY CAROL SLIWA
SAN FRANCISCO

Hordes of companies may be rushing to the Internet in search of fame and fortune — but not most retailers and consumer goods suppliers and manufacturers.

A Deloitte & Touche LLP study released last week shows that roughly one-third (35%) of 156 retailers surveyed and a mere 17% of 143 consumer goods manufacturers polled are selling merchandise from their Web sites.

And among those that either have a Web site or plan to have one, more than half said they're "not organized" about their electronic-business activities, and 34% said they don't view the Internet as "strategic."

"We were absolutely shocked," said Lindsay Parker, a consultant at San Francisco-based Deloitte. "People are being very cautious. They're just not sure they're ready to take the plunge."

Seema Williams, an analyst at Forrester Research Inc. in Cambridge, Mass., speculated that Deloitte may have included some small retailers in its poll that "simply don't have the wherewithal to invest in e-commerce. Most major retailers are selling online in one way, shape or form. Now I can't say they're doing it well, but they're learning."

Deloitte's pool of 387 companies sampled retailers and consumer goods firms, brokers and distributors and a handful that didn't fall into any of those categories. Nearly half of the respondents listed annual revenue in excess of $100 million.

Citing a Forrester study that showed that only 1% of consumer spending last year came from Internet sales, Parker said many companies question why they should focus time and capital on a new channel where the potential payback is unclear and success could mean cannibalization of the brick-and-mortar operation. ◗

Web Site Strategy

What is the primary strategic purpose of your Web site?

33%	Gain competitive advantage
31%	No strategy
19%	Competitive parity
13%	Other
4%	Don't know

Base: 387 companies surveyed, including retailers, consumer goods manufacturers, wholesalers and distributors

SOURCE: DELOITTE & TOUCHE LLP, SAN FRANCISCO

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Government, Industry Discuss Y2K Lessons

Risk modeling is conference highlight

BY ANN HARRISON
LIVERMORE, CALIF.

GOVERNMENT and industry officials who met here last week agreed that the enterprise risk-analysis models and management practices used to determine potential year 2000 computer failures offer valuable lessons for the analysis of future security and infrastructure threats.

The conference, co-sponsored by the Center for Global Security Research at Lawrence Livermore National Laboratory, featured John Hamre, U.S. deputy secretary of defense. He noted that the one Y2K-related computer failure at the Department of Defense (DOD) — the malfunction of a satellite-based reconnaissance system — occurred because the department didn't conduct end-to-end testing of the system prior to the date change.

Hamre said Y2K preparations made the DOD realize how dependent it is on private-sector services like power generation and telecommunications, which must be included in integrated disaster planning.

"We are astoundingly dependent on the success of partners, and that frightened us," said Hamre, who expressed concern about the just-in-time delivery process adopted by many vendors. "We sent teams to 2,000 companies to see if they were going to be ready. We gained confidence in industrial partners that we hadn't leaned on before, and now [we] have much more willingness to adopt these business practices."

Joseph M. Weiss, technical manager of the Y2K program at the Electric Power Research Institute in Palo Alto, Calif., which represents 114 worldwide electric utilities and corporations, confirmed that the industry's Y2K preparedness created an information-sharing and contingency-plan testing model that deepened their understanding of systems operation. For example, Weiss said, better mechanisms are needed to report minor problems so information technology managers can swiftly fix and document them.

Weiss added that while critical control systems didn't use dates, noncompliant embedded chips did affect noncritical systems such as operator displays and trend reporting. He said Y2K projects helped shed light on non-Y2K infrastructure issues, like the need to review and update authentication software, communications protocols and systems integration.

"IT is not addressing operating systems, and they are as critical to security as networks and PCs," Weiss said.

Despite the success of good business practices, attendees said better security preparedness metrics are needed. They also worried that remediation knowledge gained would disappear as Y2K staffers lose their jobs. "Who will carry it on?" asked Bill Curtis, who led Y2K projects at the DOD. ◗

When Plans Fail

Chris Barnacle, who led Y2K preparedness for NATO, said a fierce windstorm that hit France Christmas Day demonstrated the **weakness** of Y2K contingency planning. The storm left 4 million homes without power, phones or water. Backup generators **weren't tested** for continuous operation and failed within two days, plunging much of France into darkness for eight days. Power wasn't entirely restored until Jan. 13. Damage estimates topped **$600 million.**

Hardware Companies Blame Slow Fourth Quarter on Y2K

Dell downgrades its earnings forecast

BY CHRISTINE McGEEVER

The year 2000 date rollover occurred without earthshaking events, but millennium-bug concerns and the Taiwan earthquake put a kink in the year-end earnings of desktop and portable PC makers.

Analysts said the last quarter of the year usually shows strong earnings, and the first quarter is typically flat. That profile doesn't seem to apply to 1999, analysts said, citing Dell Computer Corp.'s announcement last week that it will report lower-than-expected earnings and revenue for the quarter ended Dec. 28.

The Round Rock, Texas-based company attributed its reduced expectations to late-year chip shortages, a result of last fall's earthquake in Taiwan, and fear of Y2K problems. Dell said Y2K paranoia resulted in $500 million in lost sales.

Dell's announcement came shortly after San Jose-based Dataquest reported that global PC sales were 2% slower than expected, growing 22% in the fourth quarter, because of the Y2K issue.

Jim Feldhan, president and co-founder of Semico Research Corp. in Phoenix, said the Y2K slowdown is a valid reason for slack fourth-quarter results among companies that sell heavily to the corporate sector. Analyst Anne Bui at International Data Corp. in Framingham, Mass., said firms grossly overestimated the corporate spending potential for the end of the year, making the consumer market the saving grace.

According to analyst Mike Fiebus at Mercury Research in Scottsdale, Ariz., Dell may have been hit especially hard by the convergence of Y2K fears and problems with its sole microprocessor supplier, Intel Corp.

Dell CEO Michael Dell last week said Intel is the company's only processor supplier and that relationship isn't likely to change.

Two weeks ago, IBM announced weak earnings, blaming Y2K-related corporate slowdowns for a slack fourth quarter. Earnings fell 4% and profits dropped 11%, compared with a year earlier. ◗

Congress: Fed Y2K Spending Was Justified

Panel now calling for security funding

BY PATRICK THIBODEAU
WASHINGTON

Witnesses told a congressional panel last week that a huge, Y2K-like spending effort is needed to protect government computers from security threats. But for now, the House Subcommittee on Government Management, Information and Technology seemed content to bask in the glow of a job well done on Y2K.

Subcommittee members concluded at their final hearing on Y2K that the more than $8 billion spent by the federal government to eradicate the Y2K bug wasn't wasted.

The committee doesn't really know, and probably won't investigate, whether some of that money was indeed wasted. Instead, it used corporate Y2K spending as an indication that lots of money was truly needed to fix the problem.

Publicly traded firms "could not afford to squander hundreds of millions of dollars on unnecessary computer problems and contingency plans. Boards of directors would not permit it," said Rep. Stephen Horn (R-Calif.), the subcommittee chairman and an ardent critic of federal Y2K efforts.

"Was the money well spent? Of course it was," Horn said.

But at the same hearing, the panel was told that information security needs the same level of effort as the year 2000 date rollover problem. Fernando Burbano, CIO at the Department of State, said federal agencies don't have the money to pursue critical infrastructure protection initiatives.

As a result, federal agencies are "poorly positioned" to "address the challenges posed by the ever-growing cyberunderworld," Burbano said.

The committee will be holding hearings on that issue.

Federal monitoring efforts on Y2K will continue for the next two months.

Joel Willemssen, information systems director at the U.S. General Accounting Office, said some problems related to the leap year are expected, and scattered glitches will likely appear in federal systems at certain reporting dates.

Despite the success of Y2K efforts, the issue left something of a paradox in its wake.

"How was it that a winter storm caused more damages and inconveniences than the Y2K problem?" said Rep. Constance Morella (R-Md.). Most of the government was shut down for two days last week after a winter storm dumped more than a foot of snow.

Asked why there were fewer Y2K problems overseas than expected, White House Y2K czar John Koskinen said many countries were reporting old information. He said Y2K status reports were often well behind the remediation progress.

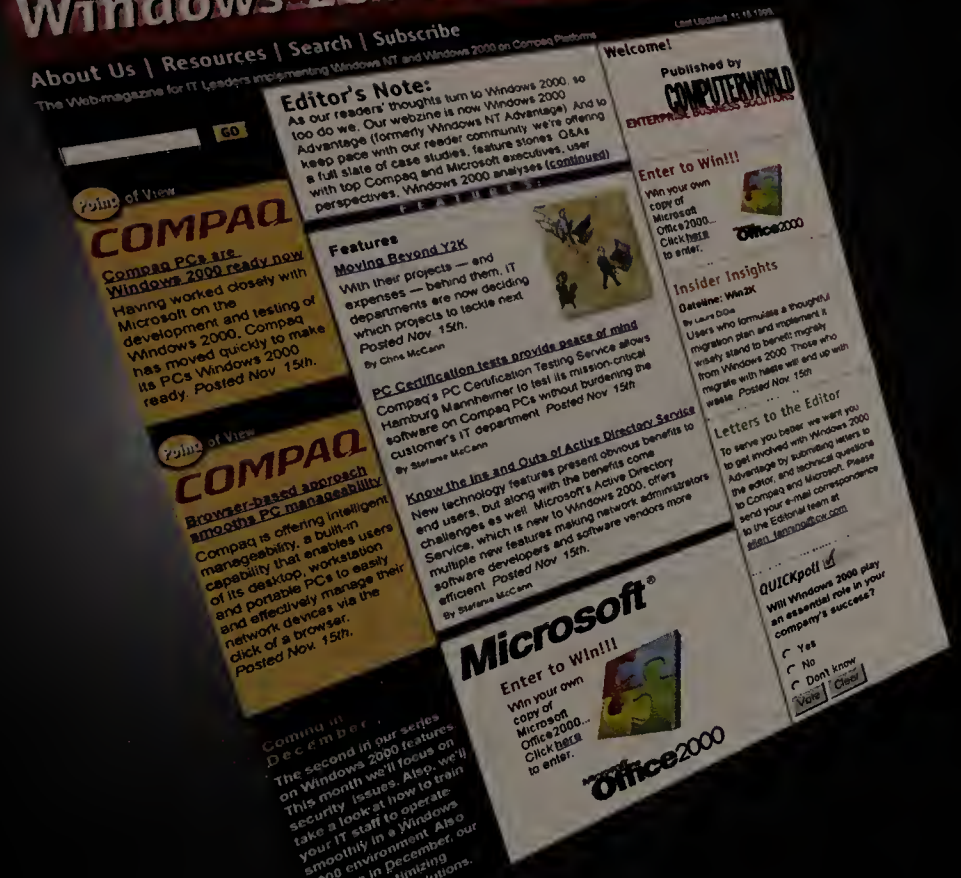
Plus, outside of the nations that are heavily dependent on information technology such as the U.S., Canada, Japan and the U.K., most countries relied on off-the-shelf software and weren't saddled with legacy systems full of Y2K bugs, Koskinen added. ◗

AT A GLANCE

Y2K Taps

Shutting Down
White House Y2K center to close in March. Next big project is leap-year rollover.

Still Watching
Although Y2K caused few problems at federal agencies, glitches are expected when systems reach reporting periods.



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Systems Management Key LinuxWorld App

Users welcome enterprise-enabling tools, as vendors ready embedded software

BY DOMINIQUE DECKMYN

LINUX is moving up into mission-critical enterprise applications and down into Internet appliances. Both trends will be on display at LinuxWorld, which opens in New York Wednesday.

Systems management tools, considered key enablers for enterprise use of Linux, are starting to appear. For example, last week's deal between Computer Associates International Inc. in Islandia, N.Y., and Red Hat Inc. in Research Triangle Park, N.C., to bundle the operating system with some of CA's systems management tools will be touted at the show.

That's a big deal for Linux and Windows NT user Pascal Wattiaux, senior vice president of technologies at San Francisco-based Quokka Sports Inc., which currently has more than 100 NT servers running its Web site and other key applications. All of those servers are managed through CA's Unicenter TNG. "We need to know, 24 by 7, which machine is in what state," said Wattiaux. Having Unicenter TNG on Linux may allow the company to replace NT servers with Linux, which, according to Quokka's testing, will perform better on the existing servers.

Another big player, Mountain View, Calif.-based Veritas Software Corp., announced the porting of its tools and will be showcasing early versions. And analysts are calling newcomer Mission Critical Linux LLC in Lowell, Mass., a future key player in Linux systems management, with software that allows a Linux server to be monitored remotely — and securely — by a service provider.

The Santa Cruz Operation Inc. (SCO), widely seen as the Unix vendor most threatened by Linux, will announce Linux versions of some of its products, expected to include its Tarantella server software, which allows Unix and Windows applications to be run from a thin client.

"If Tarantella came on Linux, I'd be very interested," said Tom Pratt, information systems manager at Seattle-based shipping company Coastal Transportation Inc., which runs its core applications on a Linux server with an Informix database. "I don't need the full power of a PC sitting on everyone's desk," said Pratt.

Bill Claybrook, a research director at Aberdeen Group Inc. in Boston, said systems management and clustering are two key components in moving Linux into mission-critical applications. Clustering products will abound at LinuxWorld (see story at left).

"I think that the fact of corporations like SCO, [Silicon Graphics Inc.], Veritas and CA making significant announcements [about Linux support] will make a lot of people who have been wondering about Linux start thinking more seriously about it," Claybrook said. "And people who are already using it might move it up a notch to mission-critical applications."

Linux is also making its way into embedded applications. Lindon, Utah-based Lineo Inc. will showcase its embedded-Linux software, called Embedix, which, combined with an additional software layer due early next year, will be able to run applications developed for Windows CE.

Red Hat is expected to announce a set of development tools for embedded systems just before the show. Santa Clara, Calif.-based Transmeta Corp. won't be at LinuxWorld, but at least one vendor is expected to demonstrate prototype systems based on the company's Crusoe processor and its Mobile Linux embedded operating system. ◗

Linux Clustering Software to Debut

With new offerings from Veritas Software, Silicon Graphics and San Francisco-based TurboLinux Inc. on display, Linux clustering will be prominent at LinuxWorld.

TurboLinux, which already ships a fail-over solution called TurboCluster, will introduce enFuzion, a clustering solution that will run on Linux and several Unix versions, as well as on Windows NT. A 12-node version will be shown at the New York conference this week; commercial availability is expected by the second quarter.

According to TurboLinux, the software will compete with supercomputer vendors like SGI. But SGI will be rolling out its own clustering product, Advanced Cluster Environment, which is based in part on the Beowulf open-source clustering software but has some of SGI's proprietary technologies. Like Beowulf, the product will be aimed mainly at technical markets. A 32-node cluster will be priced at $125,000, including hardware, software and installation costs.

Veritas last week announced that it would port its Cluster Server software, which competes with clustering solutions from Sun and Hewlett-Packard Co., to Linux. [See "Veritas Promises Linux Clustering," page 58.]

– Dominique Deckmyn

Linux Rundown

Products and exhibitors likely to grab LinuxWorld attendees' attention:

- Mission Critical Linux will demonstrate remote monitoring software for Linux servers
- Linux clustering: new offerings from TurboLinux, SGI and Veritas
- Sun will show Linux running on SPARC-based servers
- Informix will launch the Foundation 2000 database for Linux and tailored versions of Linux to run it.
- VA Linux and others will jointly demonstrate Global File System, which allows multiple Linux servers to share networked storage

Continued from page 1

SAP Taps Users

working side-by-side to develop new software modules or functionality that will later be made available to other users.

For example, New York-based Colgate-Palmolive Co. is helping SAP design software to let consumer products firms synchronize their production schedules with promotions planned by retailers.

Other projects are under way with big users such as DaimlerChrysler AG in Germany; GTE Corp. in Irving, Texas; and The Goodyear Tire & Rubber Co. in Akron, Ohio, said David Boulanger, an SAP analyst at AMR Research Inc. in Boston.

The goal is to speed up development and make sure new applications meet the real business needs of bellwether users, who in turn get a chance to shape the software and to start using it ahead of other companies in their industries.

"In the past, our experience has been that SAP pretty much developed products without a huge amount of [user involvement]," said Robert Rubin, CIO at chemical maker Elf Atochem North America Inc. in Philadelphia.

But that hasn't always resulted in the best possible software, Rubin said. Elf Atochem and SAP recently talked about the idea of working together to extend R/3's ability to manage compliance with government safety regulations on handling chemicals, he added. But a deal hasn't been struck yet.

SAP has worked with individual customers on a smaller scale before. For example, a version of R/3 released two years ago for apparel and footwear makers was developed with Reebok International Ltd. in Stoughton, Mass., and VF Corp. in Greensboro, N.C.

Early last year, SAP joined with Texas Instruments Inc. in Dallas to develop Web-based software that manages distributors' semiconductor sales.

Finding Help

But Chris Larsen, president of SAP America Inc. in Newtown Square, Pa., said SAP last summer launched a more concerted joint development initiative in an attempt to "come up with stronger [products]."

SAP "realized that [its developers] don't have all the answers," Boulanger said. "This is a direct admission that they need help." The German vendor has signed about 20 deals that link its developers with real business users, he added.

Phil Coup, a vice president at Texas Instruments, said the company's joint project with SAP cut the time needed to develop the distribution-management module by 50% or more.

A half-dozen workers from TI spent more than six months helping to design and test the software. Changes could be made while it was being developed — a big plus when users often "don't even know what they're going to need until they start seeing some things they can test," Coup said.

Peter Burrows, chief technology officer at Reebok, said 20 of the company's employees moved to Germany for a year to help SAP with everything from conceptual design to the layout of individual application screens.

That let Reebok "really articulate our needs," Burrows said. But there's potential danger that such projects could produce software geared too much to a single user, he added. "Both parties have to understand what the rules are."

Larsen said the increased joint development work was part of the impetus for the hiring of more than 700 new engineers this month. That increases SAP's development staff by nearly 15% as it tries to speed up the progress of new applications deemed critical to revitalizing its U.S. business after sales grew just 7% last year. ◗

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BRIEFS

Microsoft Combines Win 95, Win 2K

Microsoft Corp. will combine two operating system projects, Neptune and Odyssey, into a single future product, code-named Whistler. The new system is intended for both consumers and business users. Microsoft had scheduled a consumer operating system code-named Neptune and a different commercial Windows 2000 follow-up called Odyssey.

Compuware Integrates CACI's Software

Compuware Corp. announced at ComNet 2000 last week that it would integrate software products acquired from CACI International Inc. with Compuware's Ecosystems application suite for performance management.

Network Management OS Introduced

RiverSoft Inc. last week announced a network management operating system, i3philosophy. It provides "a software management layer between the hardware infrastructure and the applications running on it." The operating system will create point solutions based on fault management, configuration, administration/accounting, performance and security management categories.

Informix Revenue Up

Informix Corp. reported revenue for the fourth quarter, ended Dec. 31, at a record $251.1 million, compared with $214.9 million for the fourth quarter of 1998, an increase of 17%. Pro forma earnings were said to be $45.4 million, a 121% increase over $20.5 million in 1998's fourth quarter.

Siebel Tops Estimates

Siebel Systems Inc. has reported better-than-expected fourth-quarter profits. Revenue in the fourth quarter of 1999 was $268 million, up from $128 million a year earlier. Net income was $45 million vs. $19.9 million a year earlier.

PC Makers Jump on Win 2000 Services

Migration, deployment assistance offered

BY JAIKUMAR VIJAYAN

MAJOR hardware vendors are rolling out new services to help users deploy Microsoft Corp.'s upcoming Windows 2000 operating system.

Hewlett-Packard Co. last week became the latest to offer such services when it announced a series of Windows 2000 offerings, including readiness-assessment services, Active Directory planning and design, server and storage consolidation, proof-of-concept testing, application-staging and migration-planning services.

HP's offerings mirror those of rivals IBM and Compaq Computer Corp., both of which have made identical announcements in the past month.

In addition, all of these vendors are also ramping up their service and support staffs in preparation for the Feb. 17 launch of Windows 2000.

For example, IBM is adding 1,200 professionals to its global services group who will be focused on Microsoft technologies. This is in addition to the 4,000 Microsoft technologies support staff already employed by IBM. Compaq claims it has trained an elite core of more than 1,000 professionals whose job will be to help customers deploy Windows 2000.

"Such programs are certainly valuable," for users said Chris Hoffman, an analyst at International Data Corp. in Framingham, Mass. "[Windows 2000] will have a range of new features and capabilities that are going to be unfamiliar to users for which they are going to be needing assistance," Hoffman said.

The technology also poses a slew of implementation and migration issues where users will need help, he said.

Service offerings such as these make particular sense for companies with IT departments that are small or engaged in other projects, said Rob Swider, a network administrator at Micromatic Textron, a supplier of parts to the automobile industry based in Holland, Mich. "I think all the major hardware vendors are doing a pretty decent job," with upgrade programs and support services for Windows 2000. Micromatic will wait at least six months after the release of Windows 2000 before moving to the operating system, Swider added.

Continued from page 1

Sun vs. Linux

dor losing market share as Linux's popularity grows and the operating system is considered for commercial development environments. Hewlett-Packard Co. and IBM are feeling its pinch as well, according to a survey from International Data Corp. (IDC) in Framingham, Mass. (see chart).

"Obviously, they feel pressure from the Linux community on the low end," said Dan Kusnetzky, an IDC analyst.

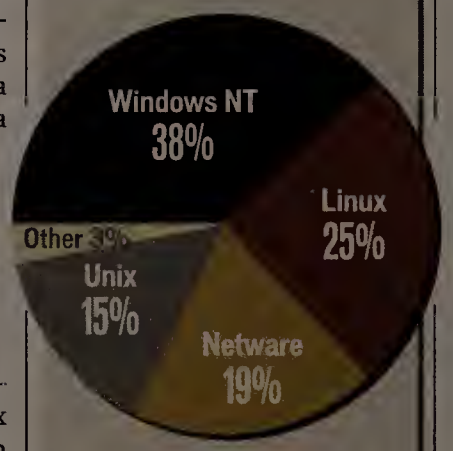
HP and IBM have been dealing with the specter of Linux for more than a year. Both write application programming interfaces so that applications written in a Linux environment can run on their respective operating systems. They also already bundle their software with their servers.

"For HP, Windows NT or HP-UX or Linux are all sensible operating environments for our Intel product line. That's markedly different from Sun, which doesn't have an Intel product line," said Les Wilson, a manager at HP in Cupertino, Calif. "To Sun, Linux is a huge threat. When a customer buys a Linux server, they aren't buying a Sun server."

Sun is trying to neutralize price as an issue for users, Hibberd said, adding, "They're the last because they're the least impacted. They've got the big servers. They're the big guns in the Internet space, especially for folks like us."

Linux Use Soars

Linux operating system sales surpassed all the variants of Unix in 1999, according to preliminary results of a new server survey:



SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

DoubleClick Faces Suit

BY DOUGLAS F. GRAY

A California woman filed suit against DoubleClick Inc. last week, accusing the New York online advertising company of unlawfully obtaining and selling consumers' personal information, according to a statement issued by her attorney.

The suit alleges that after DoubleClick's purchase of direct marketing firm Abacus Direct Corp. last year, it combined cookie technology with the information it acquired in order to collect and cross-reference personal information without the consent or knowledge of users.

A Look Behind the Solaris 8.0 Curtain

Features touted by Sun Microsystems Inc. in Solaris 8.0 include the following:

■ Automatic dynamic reconfiguration, for building partitions within the Unix operating system to automatically reallocate processors into areas that need them.

"It's a pretty slick technology that all the other competitors would like to have," said Jonathan Eunice, an analyst at Illuminata Inc. in Nashua, N.H. "It's a nice technology to have, in particular at a large service provider or a large dot-com."

"We sell 24 hours a day and have customers in France, Germany – all over the world. [Automatic dynamic reconfiguration] maximizes your investment," said Gordon Jones, CIO at Beyond.com Corp. in Santa Clara, Calif., which uses Sun servers running Solaris 7.0.

■ A hot-patching capability that allows developers to make changes to the code of a running Unix kernel. "To be able to upgrade and reconfigure the site without shutting down provides much greater availability of the Web site," said Joe Chung, chief technology officer at Art Technology Group Inc. in Cambridge, Mass.

But Eunice has words of caution. "It's a dangerous feature," he said. "If you're a shop that needs high availability, do not change the kernel while it's running. If that update fails, it can corrupt everything. It's one of those theories that is absolutely delightful, but if you have an operational discipline, you're probably not going to let it be used."

■ Live upgrade, on the other hand, got a gold star from Eunice, who hasn't seen other vendors offer a utility for installing and reconfiguring new versions of the operating system as the current system runs. The alternative, a "rolling upgrade" requires an environment of clustered servers and has been used for many years, he said.

"It's a nice little incremental upgrade," Eunice said. "They've had 60% to 70% of these features for some years."

– *Robin Robinson*

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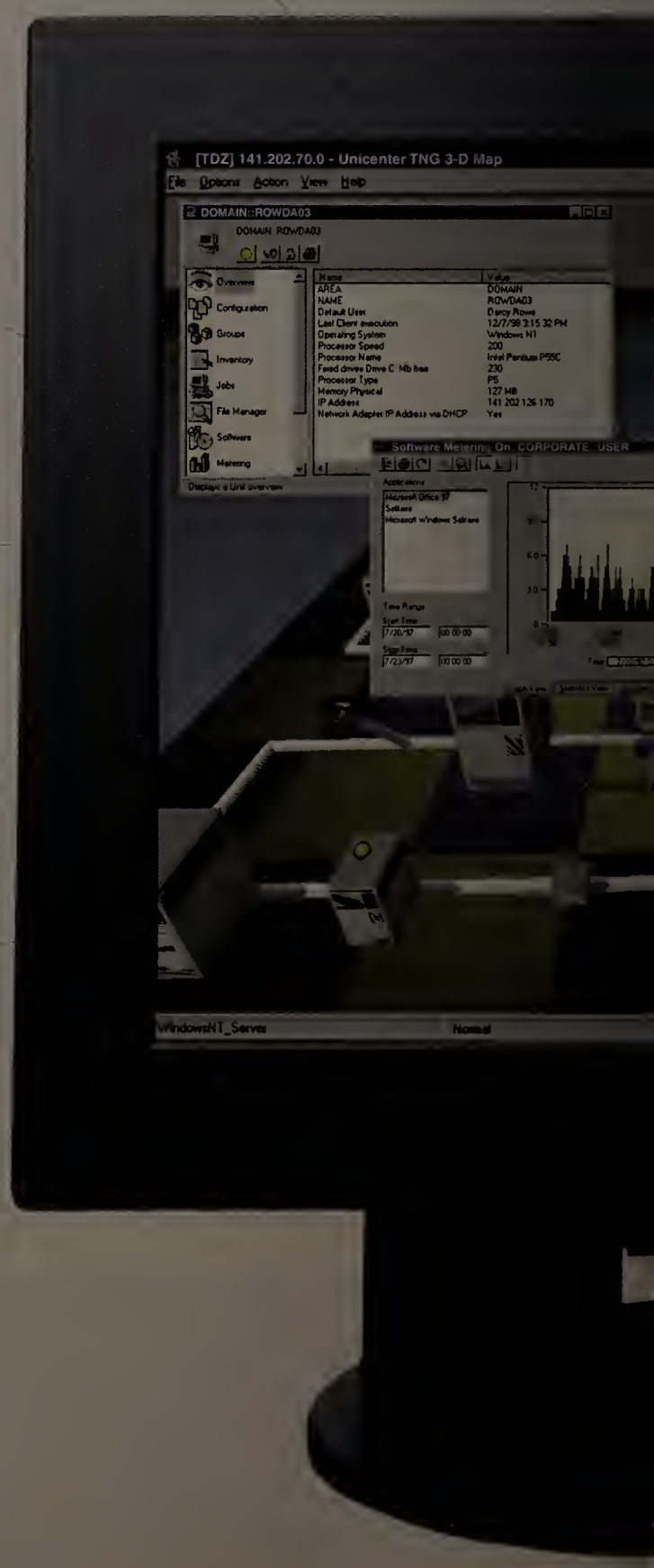

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BRIEFS

Food Makers Sign Up with Online Grocer

Online grocery home-delivery company Webvan Group Inc. last week announced it will add products from five major food and consumer products companies to its offerings on Webvan.com. The Foster City, Calif., company, which serves the San Francisco area, has entered into business agreements with The Pillsbury Co. in Minneapolis; Kellogg Co. in Battle Creek, Mich.; The Quaker Oats Co. in Chicago; General Mills Inc. in Minneapolis; and the U.S. division of Nestle SA, which is based in Switzerland.

BellSouth Expands Security Services

BellSouth Corp. in Atlanta has formed two new business partnerships to extend its network consulting and security offerings for companies that want to do more business over the Internet. The alliances are with New York-based Predictive Systems Inc., in which BellSouth bought a $10 million equity stake in October, and Atlanta-based Internet Security Systems Inc., according to company officials.

AOL Board Member Quits Seat in Conflict

Bertelsmann AG CEO Thomas Middelhoff resigned from America Online Inc.'s board of directors, saying it was inappropriate for him to continue on AOL's board in light of AOL's planned acquisition of Time Warner Inc., a competitor of the German media conglomerate.

Middelhoff's board seat will be filled by AOL Vice Chairman Kenneth Novack.

Short Takes

After a search that began late last year, IBM found that FUNDS XPRESS FINANCIAL NETWORK INC. in Austin, Texas, bought the 1 millionth RS/6000 server in August. . . . THE BRITISH GOVERNMENT launched Greenwich Electronic Time (GeT). Based on Greenwich Mean Time and Coordinated Universal Time, GeT is meant to be a time standard for e-commerce.

Federal Court Blocks Microsoft on Java

Sun wins round in lawsuit; in antitrust trial, government rebuts Microsoft points

BY PATRICK THIBODEAU

A FEDERAL JUDGE last week reinstated an injunction against Microsoft Corp. preventing it from developing its own version of Java to compete with rival Sun Microsystems Inc.

The action by U.S. District Court Judge Ronald Whyte prevents Microsoft from distributing operating systems, browsers or tools that fail to pass Sun's Java compatibility test. It also requires Microsoft to warn developers that incompatible tool kit products will result in applications that run only on Microsoft's implementations.

With the injunction, "things are much better for the Java community, because it ensures that we have standard Java on the Windows desktop and [that] Microsoft continues to lose this battle to subvert Java," said Anne Thomas Manes, an analyst at Patricia Seybold Group in Boston.

But Microsoft said the decision has no real impact because the company never veered from the terms of the initial injunction issued about one year ago. "It's a status quo — it affects our customers in no way; it affects our products in no way," said Microsoft spokesman Jim Cullinan.

Whyte cited contract and copyright law as the reason for issuing the earlier injunction. An appeals court disagreed with the copyright violation contention and lifted the injunction. Whyte's new order removed that part of the claim.

A Sun lawsuit filed in 1997 alleges that Microsoft sought to take control of Java by "polluting" it with its own changes. Microsoft has asserted that any changes it made were designed to improve Java's ability to function with Windows.

Microsoft last week also took a hit from the government in its antitrust case. In a brief it released, the government was dismissive of Microsoft's defense, accusing it of having "nothing of substance to say" in some parts and of evading the arguments raised by trial Judge Thomas Penfield Jackson in his findings of fact that the company is a monopoly.

The government brief was a rebuttal to an earlier filing by Microsoft. In that filing, the company argued it wasn't a monopoly and, observers said, sought to set up its case for later appeals [News, Jan. 24].

The government has accused Microsoft of violating antitrust law, which Microsoft denies. Both sides are meeting with a court-appointed mediator in an effort to arrive at a settlement. The prospects for any settlement remain bleak.

AT A GLANCE

Sun vs. Microsoft

Oct. 1987: Sun files suit against Microsoft, accusing it of releasing an "impure" version of Java in its products, hurting cross-platform ability.

Nov. 1998: Judge issues an injunction that says Microsoft's Java-related products must comply with Sun's compatibility tests.

Aug. 1999: Appeals court lifts injunction.

Jan. 2000: Judge changes injunction to comply with appeals court ruling, reinstates the order.

SAS to Tighten Ties to IBM's DB2 Database

Deal includes tools, consulting services

BY ROBIN ROBINSON

SAS Institute Inc. and IBM announced a three-year deal to jointly develop business intelligence software more tightly integrated with IBM's DB2 database and hardware.

More than 1,900 firms use business intelligence and data-analysis tools from Cary, N.C.-based SAS on IBM's DB2 database at more than 2,700 sites worldwide.

"Anytime there's a partnership like this, and I'm using both products, it makes my life easier," said Tracy Cermack, manager of systems development at Torrance, Calif.-based American Honda Motor Co.'s service engineering information department in Los Angeles. Cermack's group reviews warranty claims to improve engineering.

Randy Erdahl, director of business intelligence at Fingerhut Cos. in Minnetonka, Minn., just completed a project using SAS to find and eliminate redundant catalog mailings.

The company lowered its mailing and advertising costs without affecting revenue significantly when its SAS analysis showed that it was sending catalogs too frequently and with products too similar in nature, said Erdahl.

Fingerhut first started using SAS with its DB2 database when it was on an IBM mainframe. The company continued using the SAS/DB2 combination when it moved to the IBM RS/6000 AIX Unix platform, said Erdahl.

The relationship between IBM and SAS aims to provide consulting services and product enhancements for companies using their tools for managing customer and supplier relationships and enterprise resource planning.

But Cermack said those business-process improvements aren't nearly as important as practical issues. "We don't get as fast a response when we're querying through SAS to a DB2 database as we do if we're querying a SAS data set," she said.

If the IBM/SAS relationship includes interface enhancements, then her team would be able to directly query the DB2 database, instead of converting data from DB2 to a SAS data set, said Cermack. "We can save a lot of CPU time, first of all, by avoiding creating SAS data sets to begin with, and second, by faster access to the DB2 database," she said.

Net Drives Music Merger

BY KIM S. NASH

With the merger of the music units of Time Warner Inc. and EMI Group PLC comes a plan for the $8 billion joint company to create an industry powerhouse both on- and off-line.

Technology drove the deal, which was announced last week, and "so did fear," said Gary Arlen, president of Arlen Communications Inc., a consulting firm in Bethesda, Md. "No one quite knows which way the music business is going, but they know they have to be online," he added.

Internet users have increasingly bought, sold and traded songs, often without paying royalties. Record companies have resisted the movement to online distribution for fear of losing the profits they make through traditional retail sales.

MP3 Rival

EMI and Warner Music Group have supported the Secure Digital Music Initiative, an effort to create a rival to the MP3 standard that blocks users from hearing music unless they pay appropriate fees.

Warner EMI Music, as the new company will be called, expects to save $400 million per year by 2003 by sharing manufacturing and distribution costs and the cost of investing in new media. Warner EMI is also expected to use its connection to America Online Inc.'s 20 million subscribers.

AOL said Jan. 10 it will acquire Time Warner in a $30 billion deal.

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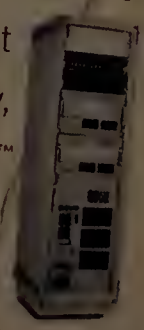

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BRIEFS

Companies Nix Merger

Ontrack Data International Inc. last week said its merger agreement with storage management vendor Legato Systems Inc. has been canceled. Palo Alto, Calif.-based Legato said in November that it would acquire Eden Prairie, Minn.-based Ontrack for $134 million. Joan Dyer, an Ontrack spokeswoman, said the termination was "mutual." Earlier this month, Legato said it would recalculate its third-quarter earnings.

Nortel Earnings Rise

Nortel Networks Corp. in Brampton, Ontario, reported last week that fourth-quarter 1999 revenue was up 21%, to $6.99 billion, compared with the same quarter in 1998. Net earnings from operations were up 58% for the quarter and 62% for the year. But the company reported a $197 million net loss for last year after figuring in acquisition costs and one-time gains and charges.

AT&T to Cut Top Jobs

AT&T Corp. spokesman Burke Stinson last week confirmed reports that the company's top ranks may be trimmed by at least 20% but wouldn't provide details. Lisa Pierce, an analyst at Giga Information Group Inc. in Cambridge, Mass., said the cuts, which are likely to come in low-growth areas such as consumer services, would be unlikely to hurt services to business customers.

Meanwhile, AT&T said its revenue for last year was $64.14 billion, up 6.2% from 1998 on the strength of growth in wireless and business services. Earnings were $1.84 billion for last year, up from $1.79 billion the previous year.

Dell Warns of Shortfall

Dell Computer Corp. in Round Rock, Texas, said last week that it will report lower-than-expected earnings and revenue for the quarter ended Jan. 28. Dell cited shortages of key products and slower-than-expected corporate sales in the wake of the year 2000 date change.

Dell said earnings will be about $430 million and revenue about $6.7 billion – 30% higher than the same period a year ago but lower than the company had anticipated.

Sun Still Mines Gold From Unix Focus

Position as only major system vendor untouched by high-end server slowdowns

BY JAIKUMAR VIJAYAN

SUN MICROSYSTEMS Inc.'s single operating system strategy — Unix — is continuing to pay off.

Sun recently announced another strong quarter, in which it saw profits rise 30% to $353 million on revenue of $3.6 billion for the period ended Dec. 26. During the same period the previous year, Sun had profits of $273 million on revenue of $2.8 billion.

In contrast, rival IBM saw revenue from its high-end Unix servers dip sharply in the fourth quarter, as did Compaq Computer Corp. Compaq reported a 5% decline in enterprise product revenue, which includes its Unix servers.

Sun is clearly benefiting from the clarity of its Unix-only message, said Jonathan Eunice, an analyst at Illuminata Inc. in Nashua, N.H.

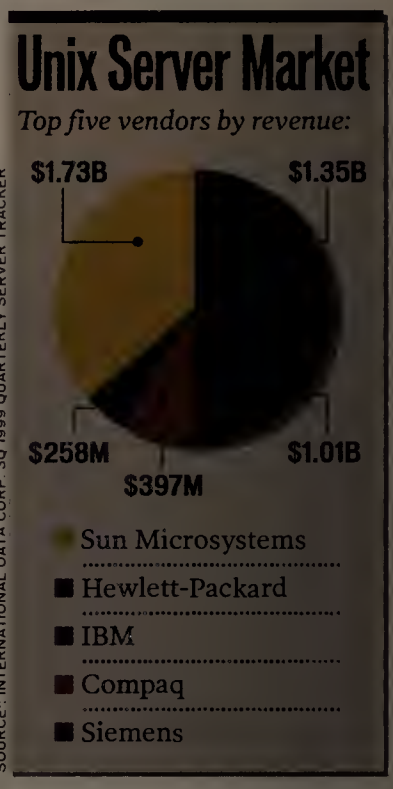
While companies such as Hewlett-Packard Co., IBM and Compaq pitch multiple operating systems and hardware platforms, Sun has made headway by focusing on driving home the advantages of Unix.

One result: Sun's high-end Unix server market share for systems costing more than $1 million grew to 40% in the third quarter of 1999 from 29% a year ago, according to International Data Corp., in Framingham, Mass. Sun has maintained its postion as the leading shipper of Unix servers for 10 quarters in a row.

Sun's marketing also helps. "It's not that their products are always the best.... They are just very adept at how to bring them to market and in creating an expectation and a desire for their products," Eunice said.

Sun's experience in selling to telecommunications companies has helped Sun establish itself as a leading supplier of infrastructure technologies to Internet application service providers and hosting services, said Joyce Becknell, an analyst at Aberdeen Group Inc. in Boston.

"Sun gets it," Becknell said. "In trying to help service providers sell more services," Sun also benefits from increased server sales, Becknell said. "If you look at HP, Compaq or IBM, they are still trying to figure out how to handle the service provider market."



EMC Boasts Its Best Quarter

Yet core business slowed somewhat

BY KATHLEEN OHLSON

EMC Corp. said last week that it had its best quarter ever and met analysts' expectations for the period that ended Dec. 31, but it also fell short in its traditional systems business.

The Hopkinton, Mass.-based company tallied $1.88 billion in sales in 1999's fourth quarter, a 21% increase from the same period the previous year. Storage systems sales totaled $1.66 billion for the quarter.

EMC's core enterprise storage business historically has grown about 30% each quarter, but it garnered 27% growth in the last quarter. CEO Mike Ruettgers said the company was on target, having expected 25% to 30% growth.

But Wall Street didn't agree: EMC stock spent last Wednesday rising and falling, opening at $114 and closing at $110.18.

Gary Helmig, an analyst at Stamford, Conn.-based SoundView Technology Group, said investors expected EMC to deliver more storage sales. But he said EMC's stock will recover in the coming months, in part because of Symmetrix 5, an upgrade to EMC's enterprise storage system that will feature Fibre Channel throughout.

During last week's earnings conference call, Ruettgers mentioned EMC's leadership over IBM, Hewlett-Packard Co. and Sun Microsystems Inc. in general.

Robert Gray, an analyst at International Data Corp. in Framingham, Mass., said he was surprised that EMC didn't mention Network Appliance Inc. in Sunnyvale, Calif., its main competitor in the network-attached storage arena. According to Gray, EMC is doing well in the network-attached storage market, but Network Appliance takes the top spot.

Despite the company's failure to meet analysts' expectations, EMC's fiscal 1999 and fourth quarter proved to be its "most successful" to date. It reported $6.72 billion in sales last year, which was 24% higher than in 1998. Profits last year totaled $1.18 billion, a 50% increase from the year before.

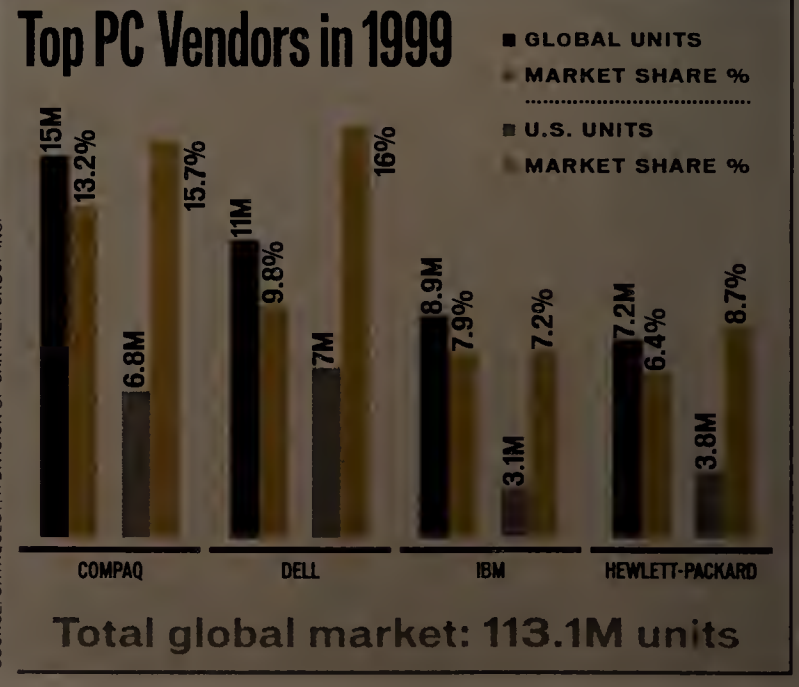
Excluding the October acquisition of Westboro, Mass.-based Data General Corp., profits totaled $377 million in the fourth quarter of 1999. Profits, including charges from the DG deal, were $207 million.

Ruettgers said EMC's software sales — $822 million in sales last year, up 85% from 1998 — "put us on a path to become one of the 10 largest software companies" this year. That group includes Microsoft Corp. ($6.11 billion in sales); IBM ($3.6 billion); Islandia, N.Y.-based Computer Associates International Inc. ($1.81 billion); and Sun ($3.55 billion).

In addition, Ruettgers said EMC is still on target to reach $12 billion in sales by next year and will hire 4,000 more employees this year.

Gray said "EMC has set some ambitious goals" for itself but "hasn't lost its edge" and has shown it's up to meeting these goals.

SNAPSHOT



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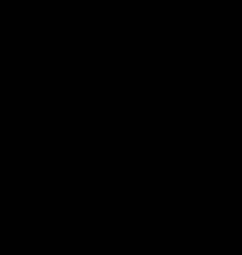

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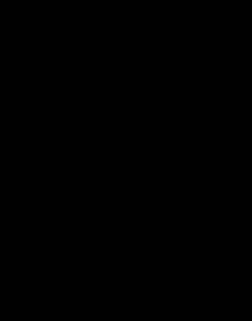

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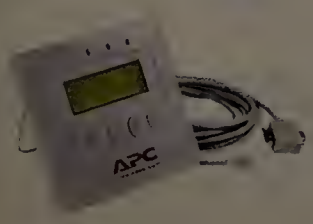

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Network Storage Standards on Tap

BY KATHLEEN OHLSON

The Storage Networking Industry Association (SNIA) has formed a working group to develop standards for network-attached storage (NAS), which would eventually offer information technology professionals uniform NAS products.

Fundamentally, NAS offers easier installation and allows users to access shared files faster and at lower cost than accessing file servers from a Unix or Windows NT workstation.

Andrea Westerinen, technical director at the SNIA in Mountain View, Calif., said the NAS Working Group will focus on clarifying and defining a common terminology for the technology. The SNIA defines *NAS* as "storage devices that connect to a network and provide file access services to computer systems."

The Storage Group's Goals

- Storage network management
- Standards for storage-area networks (SAN)
- Disk resource management
- Standards for devices that build SANs

Although the SNIA defines NAS specifically, vendors and users alike seem to be at a loss for a definition. "Worlds get complex when vendors get involved, and vendors need to know what they mean by *NAS* or know what that term means," Westerinen said. Several NAS definitions are floating around, including these two: "disk storage system attached to a Fibre Channel network" and "file storage systems attached to an IP network."

According to Peripheral Concepts Inc., NAS tallied $2.2 billion in sales in 1999 and will increase to $3.3 billion this year. Farid Neema, an analyst at the Santa Barbara, Calif.-based research firm, said any supervision for an NAS standard will boost its adoption.

Another main goal for the NAS Working Group is defining the Common Internet File System (CIFS) protocol. Originally created by Microsoft Corp., CIFS allows clients to open, close, share and lock files. CIFS is one of several file systems involved in an NAS environment, but it's the most flexible, Westerinen said. The group is shooting for a July deadline to propose an expanded CIFS protocol before the Internet Engineering Task Force.

Also a target is sharing files across various operating systems, such as Linux, Solaris and Windows 2000 and 98, in different environments. The concept is "well accepted and well understood" but isn't happening now, she said.

Chris Selland, an analyst at The Yankee Group, said a standard is missing from NAS offerings, "but the reality is, a vendor will come in and dominate the NAS market, create a standard, and everybody else will fall into line."

ATTENTION

PURCHASERS OR LESSORS BEFORE DECEMBER 10, 1999, OF CERTAIN PACKARD BELL NEC, INC. AND NEC TECHNOLOGIES, INC. NOTEBOOK COMPUTERS

Your rights may be affected by a class action In the 157th Judicial District Court of Harris County, Texas

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TO: NATURAL PERSONS,, CORPORATIONS, ASSOCIATIONS, PARTNERSHIPS, TRUSTS OR ANY OTHER TYPE OF LEGAL ENTITY WHO, PRIOR TO DECEMBER 10, 1999, PURCHASED OR LEASED IN THE UNITED STATES OF AMERICA A NEW NOTEBOOK COMPUTER MARKETED DIRECTLY OR INDIRECTLY BY NEC TECHNOLOGIES, INC. OR PACKARD BELL NEC, INC. FOR THEIR OWN USE AND NOT FOR RESALE TO OTHERS THAT IS ONE OF THE FOLLOWING MODELS:

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NOTICE IS HEREBY GIVEN, that a lawsuit is pending in the 157th Judicial District Court of Harris County, Texas, (Civil Action No. 98-29911) (the "Action") in which Richard Weiser ("Class Representative") claims that NEC Technologies, Inc. ("NECTECH") and Packard Bell NEC, Inc. ("Packard Bell") (collectively "Defendants") misrepresented the battery operating life of new notebook computers, models: (a) Versa 2400 (2430CD, 2405, 2405CD, 2435CD), (b) Versa 2500, (c) Versa 2600, (d) Versa 6000 (6000H, 6010, 6010H, 6030, 6030X, 6030H) (e) Versa 2700 or (f) Versa 6200 ("Computers") in certain of Defendants' marketing materials and/or users' guides. Defendants deny the Class Representative's allegations and have alleged numerous affirmative defenses.

IF, BEFORE DECEMBER 10, 1999, YOU PURCHASED OR LEASED IN THE UNITED STATES OF AMERICA A NEW NOTEBOOK COMPUTER MARKETED DIRECTLY OR INDIRECTLY BY PACKARD BELL NEC, INC. OR NEC TECHNOLOGIES, INC. THAT IS ONE OF THE MODELS LISTED ABOVE FOR YOUR OWN USE AND NOT FOR RESALE OR LEASE TO OTHERS, THEN YOU MAY BE ELIGIBLE TO SHARE IN THE BENEFITS OF THE SETTLEMENT.

The proposed settlement will provide class members the option to receive one of the following Product Options at no charge: (1) a new lithium ion battery which fits into the Computer's battery compartment; (2) a "Y" adapter, along with a mouse and keyboard; or (3) an AC adapter. In addition to offering these product options, Defendants have agreed to pay a total sum not to exceed One Million Nine Hundred Thousand Dollars ($1,900,000.00) in full payment of the fees, costs, and expenses of Mark A. Carrigan and Raymond L. Thomas, the attorneys representing the Class Representative and class members.

To receive one of the product options, you must fill out and return to Packard Bell Claims Administrator, P. O. Box 9348, Garden City, NY 11530-9348, a Claimant Election Form. Claimant Election Forms and copies of the detailed "Notice of Proposed Class Settlement", which describes the Action, the proposed settlement, and the rights and options available to class members, may be obtained by calling Packard Bell Claims Administrator, at 1-888-275-0530.

Any requests for exclusion from the proposed settlement must be sent by certified mail to Maxine D. Goodman, postmarked by the 24th day of March, 2000. Rights regarding exclusion are fully explained in the "Notice of Proposed Class Settlement."

Any objections to the proposed settlement must be filed with the Court and sent by certified mail to Maxine D. Goodman, postmarked by the 24th day of March, 2000. The procedure for making an objection is fully explained in the "Notice of Proposed Class Settlement."

Pursuant to an Order of the 157th Judicial District Court of Harris County, Texas, the Court will hold a hearing in the Courtroom of the 157th Judicial District Court of Harris County, Texas, 300 Fannin, Houston, Texas 77002, on the 14th day of April, 2000, at 9:00 a.m. to determine the following: (1) whether the proposed settlement of the class action litigation on terms set forth in a Settlement Agreement and Release dated December 14th, 1999, is fair, reasonable and adequate; (2) whether a settlement class should be certified; and (3) whether the Court should enter the proposed final judgment.

DO NOT CONTACT THE COURT OR THE CLERK'S OFFICE FOR INFORMATION

DATED: February 1, 2000

IBM/Intel to Develop Apps for Autos

BY LEE COPELAND

IBM and Intel Corp. are teaming up to build Web and wireless applications for automakers and their suppliers.

IBM and Intel announced last week that they plan to develop what they call In-Vehicle Information Systems. These systems will enable automakers to offer online navigation, vehicle diagnostics and Internet access services in new cars. The companies said Schaumburg, Ill.-based Motorola Inc. will also support the venture.

IBM will use its pervasive-computing software for the core of the system, which will also feature embedded Java, voice and text-to-speech recognition technology from IBM's ViaVoice product, and back-end network connections. Intel will provide Pentium processors designed to operate properly in cars traveling in temperatures ranging from minus 104 to positive 185 Fahrenheit.

IBM and Intel plan to make the technology available to automakers and their suppliers by next year at a cost of $150 to $220 per vehicle. Both Ford Motor Co. in Dearborn, Mich., and General Motors Corp. in Detroit plan to deliver similar Web and wireless services in some vehicle models later this year.

Automotive analyst Michael Robinet at CSM Worldwide Inc. in Northville, Mich., said IBM and Intel should have an easy time winning manufacturers as customers but added that automakers need to beef up vehicle electrical systems to better support computing services.

"Automakers do not want to do any homegrown software development. They understand that to go it alone is too time-consuming and consuming of their resources, which they would rather utilize elsewhere," he said. "There is a 12-volt system in most vehicles, which means there's not enough electricity to go around."

Robinet said he expects most automakers to adopt 42-volt electrical systems by 2004. Until then, sharing electrical power among options like power steering, air conditioning, heated seats and computing devices presents a challenge, he said.

Under the Hood

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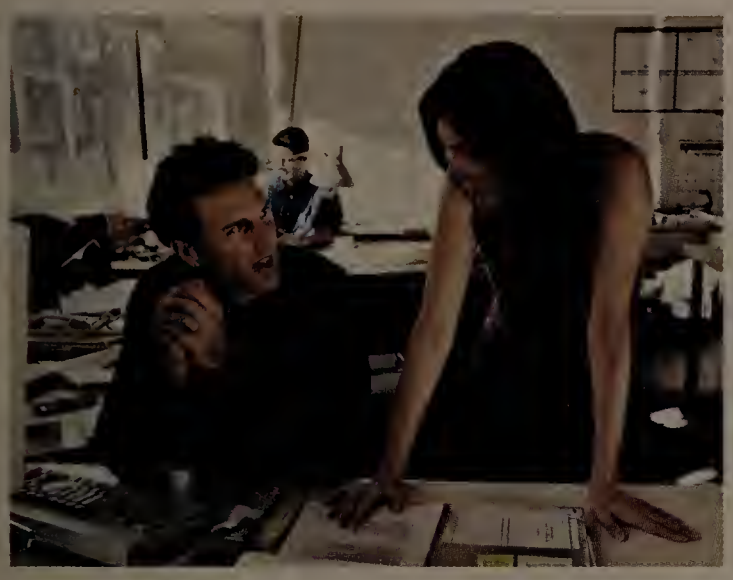

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IBM to Push AS/400 Into ASP Arena

New vendor program, customer loyalty may inspire acceptance

BY MARK HALL
SAN DIEGO

NOT UNLIKE the legendary Beach Boys and Huey Lewis and the News, who entertained 4,000 IBM independent software vendors, resellers and distributors at PartnerWorld here this week, IBM is ready to continue rocking and rolling with its venerable AS/400 server in the fast-growing application service provider (ASP) market.

This week, IBM is expected to announce a program to entice many of its 8,000 independent software vendors to make their applications ASP-capable and induce its extensive reseller network to sell new customers on the advantages of running their software remotely on ASP sites.

The AS/400 doesn't hold a measurable share of the ASP market compared with Unix and Windows NT and will have an uphill battle to gain acceptance, said analysts. But that could change because of strong customer loyalty.

Indeed, "[90%] to 95% of AS/400 customers would rather give up their firstborn child than give it up," said Laurie McCabe, an analyst at Boston-based Summit Strategies Inc. As new applications become available through ASPs, users will likely adopt them to save time and resources in developing, deploying and managing new software, she said.

But because of the dominant role of Unix and NT in the service provider market, IBM has its "work cut out," McCabe said.

But Drew Flaada, director of AS/400 product marketing, said, "The AS/400 has an improper reputation as a green-screen system. But that's just not the case."

Richard Bernard, CIO at Infinium Software Inc. in Hyannis, Mass., said the AS/400 is the ideal platform for ASPs. He's overseeing two data centers — one at Infinium headquarters and one in Boston — that will host Infinium's portfolio of AS/400 applications. "This is a huge market opportunity for us," he said.

The AS/400 offers the oft-touted features of scalability, manageability and performance of other platforms, Bernard said. But it adds something more. "Have you ever heard of a virus on an AS/400? Doesn't happen," he said.

In a highly competitive ASP market where security is an issue, this could become a big difference for users, he said.

Judith Hurwitz, CEO of market research firm Hurwitz Group Inc. in Framingham, Mass., said she doubted the wisdom of software vendors like Infinium becoming ASPs. "If they are going to be at all successful, that model has to change," she said.

But few service providers offer AS/400 platforms today — only eight, according to IBM. Maria Burud, a senior vice president at Infinium, said the lack of options forced the company to invest in its own data centers.

IBM's planned announcement is said to include financing incentives, technical support and marketing programs designed to attract service providers to the platform, and increase the number of ASP-ready AS/400 applications.

Norwegian's Computers Seized in DVD Dispute

Raid follows U.S. copyright lawsuits

BY ANN HARRISON

A 16-year-old Norwegian who helped develop software that's allegedly aimed at making unauthorized copies of DVDs had his computer equipment seized last week by law enforcement officials.

The raid follows three related U.S. lawsuits filed by the motion picture industry against software developers, journalists and an Internet service provider, creating a public debate over laws governing copyright and trade secrets.

Federal judges in two separate DVD cases have issued preliminary injunctions to force Web site operators to stop making available a software program that breaks the DVD encoding system [News, Jan. 24].

Jon Johansen, the teen-ager, posted a message on the Slashdot.org Web site Jan. 24 that stated Norwegian authorities had seized two computers and his cellular phone from his home in Steinholt, Norway.

Johansen is the co-founder of a group called Masters of Reverse Engineering. Members of the group developed a software program, called DeCSS, that's designed to break the DVD encoding system and let users view DVDs on computers running the Linux operating system. Johansen was among the first to post the program on the Internet.

Johansen says the encryption codes on DVDs don't provide copy protection. He says they simply control playback and give the motion picture industry a monopoly on who gets to make DVD players.

Charges Filed

But according to Norwegian newspapers, Simonsen Museuus, a law firm in Norway, has charged Johansen with breaking a security system. Both he and his father, Per Johansen, have also been charged with copyright infringement. His father was indicted because he owns the domain for his son's home page.

The lawsuits involving the U.S. movie industry were filed on behalf of the Los Angeles-based Motion Picture Association (MPA), which represents the interests of the seven largest American movie makers, including The Walt Disney Co. in Burbank, Calif., 20th Century Fox in Los Angeles and Universal Studios Inc. in Universal City, Calif.

The MPA suit cites a Norwegian law that makes it illegal to "break a security arrangement" to access data. It's unclear whether the provision can be applied to a situation where someone breaks a security system to access material on a device the person already owns.

The law firm representing the MPA also represents the DVD Copy Control Association, which licenses DVD players.

The MPA is using this case "as their test for novel legal theories, putting pressure on prosecutors to arrest this kid," said Robin Gross of the Electronic Frontier Foundation in San Francisco, which is arranging for Johansen's defense. "If the industry can get a precedent here, they can use it to squelch speech in other countries."

Another Suit Looms for iCraveTV

Canadian TV broadcasters are joining U.S. counterparts in a legal fight to block a Toronto company from transmitting television programs via its Web site.

Canadian television broadcasters will be filing suit against TV webcaster iCraveTV, charging the company and its founder with copyright infringement, according to the North American Broadcasters Association. The charges will closely follow two complaints filed two weeks ago: one filed jointly by the National Football League and the National Basketball Association, and another filed on behalf of 10 U.S. film companies and three U.S. television broadcasters by the MPA.

The U.S. suits seek a temporary injunction against iCraveTV.com, the Web site from which the Toronto-based company webcasts television feeds from U.S. and Canadian stations. The suits also charge copyright infringement by the webcaster and seek damages.

According to Bill Roberts, general secretary of the North American broadcasters group, the Canadian suits will be similar to the U.S. suits.

ICraveTV hasn't released a response to the suits brought against it, and its founder, William Craig, didn't respond to requests for comment.

MPA president and CEO Jack Valenti said the suits filed by his organization, the NFL and the NBA were coordinated efforts, but the Canadian suit or suits will be independent of U.S. efforts.

– *Christine McGeever*

CIM Standard Gets a Boost

BY SAMI LAIS

The Common Information Model Object Manager, a new application in the Formula electronic-business management suite from Managed Object Solutions Inc. in Fairfax, Va., will let managers take advantage of the Common Information Model (CIM) to simplify systems management.

The CIM standard is a way of describing systems, networks, applications and devices from disparate makers and platforms.

The Formula CIM Object Manager console receives data from the objects it treats by putting a Common Object Request Broker Architecture "wrapper" around servers, platforms and enterprise management software such as NetView from Tivoli Software Inc. or Patrol from BMC Software Inc., according to Managed Objects.

The software, expected in April, is "a little ahead of the curve," said Paul Mason, an analyst at International Data Corp. in Framingham, Mass. "Increasingly, people are implementing CIM-enabled applications and systems," he said.

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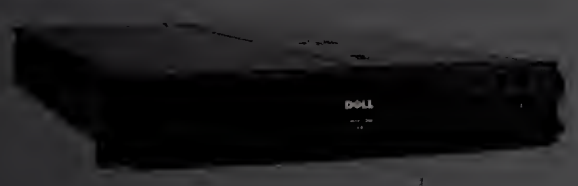

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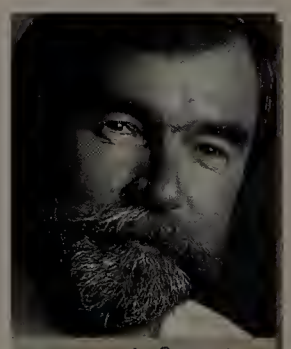
MARK HALL

Commonsense law

KEEPING AN EYE ON the courtroom is almost as important as watching Internet developments these days. Sometimes it's frustrating when the courts make idiotic decisions, such as when a judge last year decided that Amazon.com "owned" the one-click checkout procedure for online commerce. We can only hope that this kind of foolishness will be overturned through appeal.



MARK HALL is *Computerworld*'s West Coast bureau chief. You can contact him at mark_hall@computerworld.com.

But sometimes, we can find examples of legal minds making sense instead of trouble for our industry.

Last week, U.S. District Court Judge Ronald Whyte ruled in favor of Sun Microsystems' request for an injunction against Microsoft's purported violation of its license of Sun's Java technology. For all of Microsoft's protestations to the contrary, this is a fairly straightforward contract dispute. Sun licensed Java to Microsoft with certain restrictions. Microsoft ignored the restrictions. Sun sued. Settlement to come. Case closed.

Then there's Ohio Attorney General Betty Montgomery. She has said that the Department of Justice "built a convincing case that supports our arguments that Microsoft has engaged in illegal and anticompetitive behavior." She also joined with the attorneys general of 19 other states last spring to sue Microsoft as a monopoly. But despite her view that Microsoft's actions need curbing, last week she told the *Los Angeles Times* that she doesn't believe the U.S. government's recourse should be to carve up the software giant. Neither do I.

Microsoft is a powerful, arrogant and often reckless company. But its strong monopolistic power is receding because technology is moving faster than it can head it off. Look at Linux server growth. Look at Palm Computing's growth. And even look at the newly resurgent Apple. To break up Microsoft today would be an unnecessary, reckless and arrogant abuse of government power.

Believe me, I have no love for Microsoft. Its products put out of business two magazines where I once served as editor in chief (*MacWeek* and *Unix Review*). My personal feelings aside, breaking up Microsoft would cause unnecessary turmoil in the industry and with IT planners. It makes no sense to me. And I'm glad that at least one attorney general is admitting it makes no sense to her.

DON TAPSCOTT

Transmeta chip may hold key for computing's future

THE SUBDUED reaction of some analysts to the Transmeta chip announcement tells me that they just don't get it. A powerful microprocessor that was designed from scratch to facilitate wireless Internet access will have a big impact on the workplace.

Transmeta's target market of wireless Internet appliances and ultralight laptops isn't -- as some commentators claim -- simply a computing "niche." It's the market of the future, and in this arena, Transmeta's Crusoe chip is dramatically more appealing than Intel's products. Intel's mission in life is to build increasingly muscular chips through increasingly complicated hardware.

DON TAPSCOTT is co-author of the book *Digital Capital: Harnessing the Power of Business Webs*, which will be released in May. Contact him at column@tapscott.com.

But big, power-hogging chips result in laptops that conk out after a couple of hours. Smaller chips that last longer are ridiculously weak and can only run dumbed-down versions of popular software.

In comparison, a Transmeta-based laptop will leap tall buildings. Running typical Windows software, the new chip will function on batteries for eight hours — i.e, a full workday.

In a revolutionary approach to microprocessor design, the Crusoe processor consists of a compact hardware engine surrounded by a software layer. This approach eliminates millions of transistors, replacing them with software. The Crusoe processor that was unveiled uses roughly one quarter of the logic transistors required for an all-hardware design of similar performance.

This offers benefits beyond just saving power. Since the hardware is not directly linked to software such as Windows, Transmeta's engineers can freely exploit the best hardware innovations, without forcing buyers to throw out their existing software.

Even potentially more important, the chip's software can evolve separately from hardware. Users could download updated software from the Internet to improve chip performance without buying a new PC. Think back to the buggy Pentium chip that Intel recalled at a cost of close to $500 million. With Crusoe, the problem likely could have been fixed with a simple software patch.

The upshot is that we now have powerful, energy-efficient chips that can operate all day and be easily fine-tuned to run a variety of software, be it Windows, Linux or whatever. This is remarkable. Moreover, using technologies such as the wireless Bluetooth innovation, these devices can be online constantly.

The implications go well beyond simply having laptops that will function during long flights. Office workers will be able to build their workdays around these units, carrying ultralight notebooks, Web pads or handheld devices from their desks to meetings inside and outside the office, all while being online. As companies increasingly link via the Internet with suppliers and customers to form business webs, having employees constantly networked will be essential.

Internet devices and laptops will explode in popularity if Transmeta can deliver the functionality and energy efficiency it promises.

MICHAEL CUSUMANO

Gates-Ballmer shuffle is a boost for Microsoft

MANY GREAT COMPANIES have two key founders or executives who have complementary skills. In Japan, for example, legend surrounds the duo of Soichiro Honda, the engine-design genius and racing enthusiast who founded Honda Motor Co. in 1946, and Takeo Fujisawa, the one-man marketing department who became his partner. In the U.S., we have Bill Gates and Steve Ballmer.

MICHAEL CUSUMANO, co-author of *Competing on Internet Time: Lessons from Netscape and Its Battle with Microsoft*, is a professor at MIT's Sloan School of Management. Contact him at **cusumano@mit.edu.**

Gates, who founded Microsoft in 1975 with Paul Allen, recently ceded his position as CEO to Ballmer, his former Harvard classmate and a Microsoft executive since 1981. Gates remains chairman and is taking on a new role as chief software architect. Ballmer has been president since 1998. Not only are they a rich duo (Gates' 15% ownership of Microsoft is worth nearly $90 billion and Ballmer's 5% nearly $30 billion), but they complement each other remarkably well.

Gates remains the technology guru and strategy genius who has led Microsoft from programming languages to operating systems, desktop applications, enterprise software and a host of Internet ventures. Ballmer has been the main administrative "firefighter" and a source of enormous energy. He has often taken on the hardest tasks, such as managing Microsoft's relationship with IBM, overseeing the chaotic Windows group in the 1980s and shaping up sales and customer support during the 1990s for the attack on enterprise markets with products such as Windows NT and BackOffice.

Why would Gates step down now? As an observer of Gates and Microsoft since I co-authored *Microsoft Secrets* in 1995, let me venture some guesses.

First, Gates appears to have tired of the demands imposed by the CEO job in recent years, especially last year. He also hasn't done such a great job. Gates has shown remarkable growth in his skills as a manager, organization leader and public spokesman since Microsoft's early days, but the antitrust trial has exposed his weaknesses. Yes, it's tedious to have every move of your company, as well as yourself, subjected to the scrutiny of the Justice Department and the media. But Gates was also deeply involved in Microsoft's legal strategy, which was to deny that the company had done anything wrong. This strategy seems to have failed — big time. Though it may not be necessary, Gates clearly doesn't have the patience to spend more years overseeing litigation and appeals strategies or negotiating with judges and lawyers over antitrust remedies, in addition to rallying the frustrated troops and deserting executives back at headquarters.

Second, the decision to make Ballmer CEO suggests that he has finally arrived as a manager. In earlier years, Ballmer often seemed too bombastic and explosive in his dealings with underlings to be an effective manager. But he matured as president and now has the full confidence of Gates, the board and senior executives. Ballmer has much more tolerance than Gates for managerial and strategic minutiae, plus more administrative and people skills. He also can't do any worse at legal strategy and negotiations. So he's ready to run Microsoft and free Gates to do other things.

Finally, with this change, Gates has stated that he wants to focus on what he and Microsoft do best: designing and thinking about software products and services for the mass market, including the rapidly evolving Internet. With Gates returning to his software roots and Ballmer running the company, Microsoft seems much less likely now than it did a few years ago to follow the lead of AOL/Time Warner into the world of electronic content. Microsoft should remain very much a software company — or become a bunch of software companies, if the government has its way.

READERS' LETTERS

Software's sad state

THE PRIMARY reason for the dissatisfaction of PC users is the sad state of software ["Analyst: IT to Blame for Some User Dissatisfaction With PCs," *Computerworld Online*, Dec. 8]. Hardware is a minor contributing factor. If software were treated to the same standards of usability design and quality control as most mechanical devices of the 20th century, the "entire user experience" would not require service and support, as analyst Rob Enderle claims. Service and support is a growth industry simply because of the fact that software is universally hideous.

We will not extricate ourselves from this confusion permeating our daily lives until software companies take three major steps:

1. Take interaction design seriously, and never allow a software engineer to design a program's user interaction (it will always end up modeling the internal workings of code, unrelated to how a human thinks and works).

2. Define product success by narrow yet targeted functionality, never by feature lists. Bloatware simply causes more confusion.

3. Let usability, quality and reliability drive the release date.

Peter Jespersen
Lead systems engineer
Nike Inc.
Beaverton, Ore.
peter.jespersen@nike.com

Mainframe vendors are people too

I WONDER IF any of the corporations that express concern over the pricing of software consider the economic issues faced by the mainframe vendors ["Outrageous Fortune," Technology, Jan. 10]? Specifically, as corporations upgrade to larger mainframes, they're often able to consolidate multiple systems. As new releases of software introduce new features, the number of lines of code increases. The cost of personnel to develop, maintain and support software continues to rise as well.

Also, new hardware and software options in the midrange market space have allowed some mainframe customers to move to smaller systems.

Where full migration doesn't occur, many sites deploy new applications on smaller systems, resulting in lower demand for mainframe upgrades.

The net effect of these factors is that vendors have a smaller client base (in terms of number of mainframes) to spread R&D expenses (both hardware and software) over. Certainly this has some effect on the software prices.

Michael Giroux
Phoenix
mlgiroux@hotmail.com

THE HEADLINE of "Outrageous Fortune" says, "Customers stuck with legacy applications say . . ." Well, guess what? Customers are *not* stuck with legacy applications. They choose to remain with them, and so they have to pay the price.

An article about how customers were dealing in a positive manner with the rise in mainframe software prices would have been nice. All this article had to say is customers don't like high software prices.

Boo-hoo.

Michael Faber
Grand Rapids, Mich.

COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Include an address and phone number for immediate verification. Internet. letters@computerworld.com.

LENNY LIEBMANN

Dot-coms' newest secret weapon doesn't have name

THERE'S AN absolutely critical new skill that most IT staffs sorely lack. It's a skill that clearly separates successful dot-coms from e-commerce wanna-bes. It's also a skill that doesn't really have a name yet. For now, let's just call it Web-application scalability engineering. It's part science and part art, and it's crucial to dealing with the new economics of e-commerce.

I know what you're thinking: "We have Java programmers. We have Unix systems administrators. They know how to build systems that scale." But do they? Or do they just know how to throw hardware at the problem?

LENNY LIEBMANN is an independent consultant specializing in the alignment of IT resources with business goals. Contact him at LL@exit109.com.

I've seen dot-coms achieve 160 times the capacity of a corporate Web site with a budget one-fifth as big. How do they do it? They're sure not gonna tell you, because it's at the core of their competitive advantage.

But what I can tell you is the dot-coms have some smart technical people on their teams who take a very cross-disciplinary approach to achieving scalability. These people understand networking issues like Internet service provider peering (how their providers interconnect with other ISPs) and payload-to-header ratios (a factor that determines how efficiently they use their available bandwidth). They understand systems issues like processor utilization and caching. They understand software engineering issues like database connection pooling (which reduces the strain on back-end resources) and intelligent agents. Their holistic view of how these components affect a customer's ability to get a fast response when they click on a Web-page button makes them formidable competitors.

These new IT alchemists know how to stretch a budget, too. They have zero tolerance for software licensing schemes that penalize them for success. They'd rather write a database from scratch than shell out six figures for the privilege of running a vendor's solution across 48 commodity Intel servers. They understand that scale isn't just about MIPS and megabits per second. It's about dollars and cents.

You see, you can't achieve scale when you're still taking a stovepipe approach to the problem, divvying up infrastructure responsibilities among systems administrators, database administrators and application developers. The new breed of technosavant is a polymath who understands that to achieve end-to-end performance you need an end-to-end perspective. That end-to-end mentality is something to which most IT shops still only give lip service. But the uber-geeks who ride shotgun on the Web's top sites have it scoped. If you don't think your company's success hinges on Web-application scalability engineering, just look at outfits like DoubleClick, Amazon.com and Motley Fool. They've been able to rise as far and as fast as they have because they've cracked the code of scalability. And they did it before the cash started pouring in.

The Web operates under a set of technical and economic principles vastly different from the world of client/server application development. At the heart of that difference is scale. Once your site starts attracting heavy traffic, scalability is what makes the difference between revenue and ridicule. Recognize it as a distinct discipline. Cultivate it among the members of your staff with the right competencies and disposition. Or prepare yourself to become the next Web scandal. Those are about your only choices in the mega-hit per second world of the Web. ◗

CATHY HOTKA

New deals with retailers are signs of the future

PAPER OR PLASTIC? Decaf or regular? Some choices in life are binary. Yet for retailers, few things are that simple, with the past several years having produced an unprecedented blurring of boundaries. Retailers have become manufacturers. Traditional manufacturers now sell directly to consumers over the Web. And some retailers have made their packing and shipping operations available to other retailers.

CATHY HOTKA is vice president of IT at the National Retail Federation, a retailers' trade group in Washington. Contact her at hotkac@nrf.com.

Technology company partnerships with retailers are just another manifestation of this trend. While recently announced partnerships between America Online and Wal-Mart, Microsoft and Best Buy, Kmart and Yahoo as well as Microsoft and Tandy may seem surprising at first, they're just the early signs of a pattern that will change the way we think about shopping, with technology at the center of it.

Soon, hybrid retailing that brings together the Web and conventional retailing will become the norm rather than the exception.

The much ballyhooed "virtual vs. bricks-and-mortar" war was never that simple. The advantages of Web shopping (unlimited selection, instant price comparison) and those of physical shopping (see it, feel it, try it on, then take it home) work best when combined. Imagine having the ability to shop the Web quickly and efficiently and then, seconds later, having a sales clerk hand you the item. Retailers are already beginning to bring the Web's advantages right into the store. Last June, a National Retail Federation committee published a paper, "The Five Phases of Retail Business-to-Consumer Web Presence," that describes how retailers will integrate the physical shopping experience with the Web.

The first three stages reflect the world as it can be seen today — from a brochure site that sells only a few items, to a full-blown commerce site to a full-blown commerce site that's integrated with the back office. But stages four and five reflect a hybrid world. Stage four describes the "Webified" store that brings IP connectivity to point-of-sale terminals and allows customers to buy the company's full range of merchandise, whether it's in the store or not. Finally, stage five addresses the integration of manufacturers' systems, enhancing replenishment and providing up-to-date product descriptions.

Strategic alliances such as AOL/Wal-Mart and Microsoft/Best Buy take this paradigm to a new level. These partnerships promise to afford customers a new level of ease and service. They'll make technology easier for senior citizens to buy, as well as for others who are just beginning to go online. They'll strengthen the brand names of physical retailers among the digerati. They'll bring online shoppers into stores and physical shoppers onto the Web. They could also help foster broadband technologies, which many believe are necessary for the full flowering of business-to-consumer commerce.

This should be a win-win situation for the partners, but it's only the beginning. While pundits ponder whether the future of shopping lies on the Web, many retailers are exploring the potential of integrating a variety of handheld devices into stores' IT architectures. For instance, store associates wielding handhelds can check a price or determine whether an item is available on-site.

But imagine the possibilities for customers wielding handhelds: Couples planning new kitchens could announce their interest online, wirelessly, as they enter a home-improvement store. Time-starved customers entering an unfamiliar mall could quickly determine where the greeting card store is. A store could push information on sales at new buyers over the Web, even into their handheld devices as they drive or walk by the store. Valued "frequent shoppers," who would otherwise look anonymous as they enter a store, could be lavished with attention as they arrived.

So as you review your holiday shopping experiences, consider the possibilities for the future. AOL, Wal-Mart, Microsoft, Best Buy and others have. They've seen the future, and it's a blur. ◗

BUSINESS

EQUAL REPRESENTATION

African-American IT professionals are pleased about the appointment of Al Zollar to the No. 1 position at Lotus Development. But they say there's still a ways to go before African-Americans are well represented in the IT industry. ▸ 40

E-COMMERCE

The insurance industry hasn't had much success selling policies online, but that hasn't stopped savvy start-ups from finding niche opportunities in the industry. ▸ 42

BENEFITS OF INNOVATION

Upper management has given Black & Veatch's John Voeller the chance to develop, implement and shepherd hundreds of innovative IT ideas. As a result, his company has gained a competitive edge in the construction industry. ▸ 46

DARK SIDE OF AMBITION

Ambition is critical — it's the root of all achievement, says Jim Champy. However, there is a dark side to it, and if we allow greed to guide our investments, we may run into serious trouble, he warns. ▸ 48

A DAY IN THE LIFE

Computerworld spent a day with Martin Eyllon to see what it's like to work as a consultant. He's been doing it for 13 years and has found a lifestyle and a workstyle that epitomize the best that independent consulting has to offer. ▸ 50

QUICKSTUDY

Competitive intelligence (CI) isn't spying. So what is it? CI professionals gather data about their companies or competitors and analyze it using many software tools and systems. They also interpret data, which means that IT plays a critical role in CI. ▸ 53

STAY ON THE JOB

Career Adviser reassures an Oracle administrator that he's more than the average junior administrator because he has a solid background in networking and a mix of skills. However, she says he should stay with a project over its life cycle to meet the criteria for a job as a senior Oracle database administrator. ▸ 54

MAKE OR BREAK

Consultants can ruin you or make you. So when you choose them, be sure to choose wisely. An IT veteran puts consultants into five categories and offers advice on how to work with each group: bait-and-switch consultants, "no problem" consultants, partner consultants, nuts-and-bolts consultants and Napoleonic consultants. ▸ 52

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ANN STATES

FOUR TOP OFFICIALS of Black Data Processing Associates are, from left, Joe M. Thompson, Yvonne Sharpe, George K. Williams and Curvie Burton

ENSURING IT EQUALITY

BLACK DATA PROCESSING ASSOCIATES (BDPA) in Largo, Md., is working to bridge the racial ravine between computer haves and have-nots. How? By going into schools and serving as role models, supporting competitions for high school students and championing qualified minority job seekers. Four BDPA members share their opinions on how to bridge the gap. 49

IT Industry Lags Behind Nation in Hiring Blacks

Zollar's CEO slot a symbol of success for African-American IT leaders

BY LEE COPELAND

AFRICAN-AMERICAN information technology professionals lauded IBM's appointment of fellow African-American Al Zollar to the top spot at Lotus Development Corp. But they also said there's still work to be done before there is adequate representation of African-Americans in IT's ranks.

Zollar, an executive at IBM for 23 years, will take over as CEO for departing chief Jeff Papows this week.

"The fact that I happen to be African-American is a positive sign, relative to demonstrating a commitment to diversity [on IBM's behalf]. But I hope it's the talent of individuals that are allowed to shine without any blockage or barriers that are artificial," Zollar told *Computerworld*. "Technology is one of those industries where it's easy to become color-blind, because it's about the skills that you bring to the table."

African-American IT professionals at Lotusphere 2000 last week said Zollar's appointment is encouraging.

Freeman Fridie, Lotus Notes architect at Pricewaterhouse-Coopers in New York, praised IBM but said he would like to see more minority hiring at all levels in the IT industry. "Obviously, it's a great start. There is very little color in the high-tech industry," said Fridie. "In general, there are very few blacks in information technology, and there needs to be more. But to have someone black at the top is a great start."

"I see [Zollar's hire] as a stepping-stone for more African-Americans to enter the IT field and to have someone there as an example to lead the way," said Catherine Moore, Lotus Notes administrator at insurance broker Aon Corp. in Chicago.

Optimistic sentiments aside, data from the U.S. Bureau of Labor Statistics shows that the hiring of African-Americans in high technology has improved only slightly during the past decade and lags behind total U.S. employment rates for African-Americans. From 1989 to 1999, African-American employment in high tech increased from roughly 5.6% to 7.1%. But African-Americans made up 11.4 % of all U.S. employees last year, up from 10.3 percent in 1989.

The biggest hiring gain in the high-tech sector came from Asian, Pacific Islander, American Indian and Eskimo groups. This category more than doubled from 6% of high-tech hires in 1989 to 12% in 1999.

In the executive suites of high-profile IT companies, African-Americans are still rare, but are becoming less so.

Last April, Symantec Corp. hired John W. Thompson, 50, a former IBM executive who is African-American, to head the antivirus software firm. Symantec, in Cupertino, Calif., posted $634 million in revenue last year. Other African-American CEOs include Dwayne Walker at ShopNow.com Inc. in Seattle, Curtis Crawford at Zilog Inc. in Campbell, Calif., and E. David Ellington at NetNoir Inc. in San Francisco.

Looking back on 20 years in the industry, the career paths of minority job candidates has improved greatly, said Denise Street-Robb, president of Mitchell Street Associates Inc., an IT recruiting firm in Atlanta. "It used to be hard to find minority candidates at the executive level, but the situation is improving."

Street-Robb has urged high-tech companies to form closer ties with and recruit candidates from colleges and universities with a strong track record in educating minority students. ◗

High-Tech Hiring Vs. Total U.S. Employment

1999	HIGH-TECH	U.S.
Total	2,214,000	133.5M
White	81%	84%
Black	7%	11%
Hispanic*	3.5%	10.5%
Other**	12%	5%
1989	**HIGH-TECH**	**U.S.**
Total	1,127,000	117.3M
White	88.5%	87%
Black	5.5%	10%
Hispanic*	3%	7%
Other**	6%	3%

*Hispanic is a subgroup of both white and black

**Asian, Pacific Islander, American Indian and Eskimo

High-tech: computer systems analysts, scientists and programmers

Total U.S. includes men and women over age 16, excluding active military, incarcerated and institutionalized people

SOURCE U.S. BUREAU OF LABOR STATISTICS, WASHINGTON

MORE THIS ISSUE

A black IT group is looking to bridge the U.S. technology gap. **See page 49.**

Online Exchange Service Offers Automated Shipping

Opens doors for doing business outside the U.S.

BY CRAIG STEDMAN

A new online service is emerging: transportation exchanges that let companies use the Web to automate logistics operations such as arranging product shipments to buyers both in the U.S. and overseas.

Several exchanges have opened since the middle of last year. They're now starting to be put to the test by online retailers and other companies that want to reduce the complexity of doing business with customers outside the U.S.

For example, Hybrid Liquidation LLC in Berlin, Md., which auctions surplus goods for companies via its Web site (*www.liquidation.com*), last month began using a transportation exchange operated by iLink Global Inc. in Glen Ellyn, Ill., to arrange shipments between its buyers and sellers.

Logistics "is kind of the Achilles' heel of the business-to-business arena," said Billy Burke, president of Hybrid Liquidation. The auction site initially left shipping arrangements to individual buyers and sellers, but that resulted in "frustrated customers and uncompleted deals," he said.

Now, the site's customers can use iLink Global's online exchange to calculate overseas shipping costs and hire and pay the freight carriers that handle the shipments. A transaction fee is added to the shipping bills by iLink Global, but Burke said Hybrid Liquidation doesn't pay anything to connect to the exchange.

Other companies that have set up similar transportation exchanges include Celarix Inc. in Boston, E-Transport Inc. in Pittsburgh and nPassage Inc. in Seattle. Burlington Northern Santa Fe Corp., a railroad in Fort Worth, Texas, last week said it is developing another exchange with Manugistics Group Inc. in Rockville, Md.

The emergence of the exchanges parallels the development of new software that's supposed to calculate the full cost of shipping products to foreign buyers once tariffs and customs duties are added to the bill. The big package carriers are teaming up with different vendors to provide the software to their corporate customers [News, Dec. 20].

John Fontanella, an analyst at AMR Research Inc. in Boston, said he expects most of the transportation exchanges to add more advanced costing and price-quoting engines during the second half of this year.

For now, many exchanges are "wide in scope, but thin in functionality," Fontanella said. The deals they can handle often are limited to one-time shipments instead of longer-term contracts, he added.

And the amount of business the exchanges are managing remains limited. For example, iLink Global has only one other live user: Gavelnet.com, a San Francisco-based company that auctions artwork and other collectibles.

After some start-up kinks, the exchange is working smoothly, said Gavelnet.com CEO George Noceti. But the number of transactions the company processes monthly is only in the hundreds now, he added.

Hybrid Liquidation is still working to set up a direct link from its Web site to the iLink Global exchange. Customers currently contact the exchange via e-mail and then wait 15 to 20 minutes to get a response, Burke said. The wait should be reduced to less than two minutes when the Web link goes live next month, he said. ◗

JUST THE FACTS

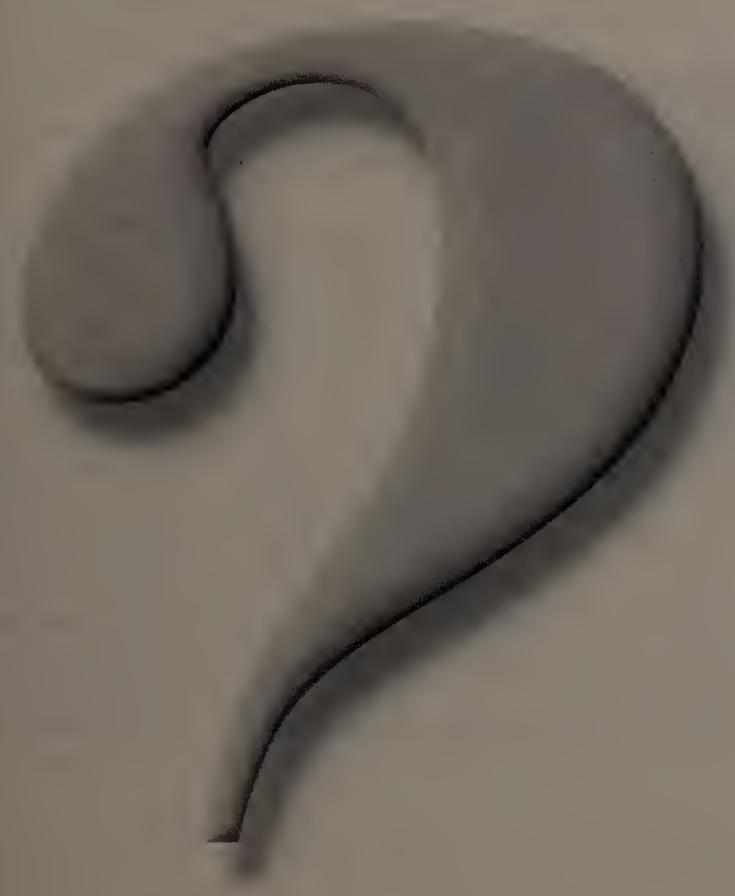
Online Shipping Exchanges

What they are: Web-based logistics services that companies can use to arrange for products to be shipped to domestic and international buyers and to manage things such as customs compliance and payment of freight carriers.

How they work: Shipments can be put out for bids from multiple carriers that offer their services through the exchanges. The companies that run the exchanges usually collect a transaction fee on each shipment.

Coming improvements: More robust transaction engines that are supposed to be able to calculate the full cost of international shipments and handle requests for long-term shipping contracts.

How will your IT staff support the increasing amount of enterprise technology within your organization ?



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Insurance E-Businesses Find Niches

Savvy companies like InsurePoint.com and CertificatesNow.com fill industry gaps

BY THOMAS HOFFMAN

The insurance industry hasn't had much success selling policies online, but some companies are finding niches to exploit anyway.

For example, ConfirmNet Corp., a San Diego-based start-up, last week launched a service designed to eliminate an administrative headache for thousands of small, independent insurance agents. The service, called CertificatesNow.com, issues by e-mail the certificates insurance agents usually have to fax to job sites to certify that a contractor or an individual is covered by liability insurance for a particular job.

Insurance agents could create these images and e-mail them to clients themselves. But their clients wouldn't be able to access the Web-based system and customize the certificates unless the agencies built an end-to-end application that provided clients access, said Dan McCarthy, CertificatesNow.com's vice president of sales.

Using CertificatesNow.com, an agent with even primitive Internet capabilities can add a printer driver to a PC to convert a certificate into an e-mailable format that can be sent to the contractor, said McCarthy.

Insurance industry experts place the typical cost to generate, print and mail a certificate of insurance at $3 to $7 per item. In contrast, CertificatesNow.com is charging customers 50 cents per fax and 33 cents per e-mail. That includes an annual subscription rate of $150 for members of the Independent Insurance Agents of America and $250 for nonmembers (plus a 5% discount on each transmission for members).

ROB DAVIDSON caters to small companies that bigger insurers might ignore

The costs "are certainly reasonable," said Carolyn Goodnight, information systems director at Schultheis Insurance Agency Inc. in Evansville, Ind., a 120-employee shop that began using the system earlier this month.

InsurePoint.com, a joint venture between Bolton & Co. and Atlantic Mutual Insurance Co. in New York, has found its niche focusing on Internet start-ups themselves. InsurePoint.com was created in June 1997 as a full-service online insurance carrier for high-tech start-ups. The idea was to cater to systems integrators, software developers and other small companies that bigger insurance companies would probably ignore because of the low commissions they initially would generate, said Rob Davidson, one of the company's co-founders, who works in South Pasadena, Calif.

To demonstrate its interest in cultivating start-ups, InsurePoint.com plans to launch an online service within the next two months that it calls the virtual risk manager. The system, a value-added service provided at no additional charge to customers, will continuously track a company's growth and trigger an electronic alert to customers that they may want to consider upgrading to umbrella liability insurance if they pass a threshold of, say, $5 million in sales, said Jeff Behm, another InsurePoint.com co-founder, who works in Madison, N.J.

That kind of attention is paying big dividends for InsurePoint.com. The average "hit ratio," or percentage of customers an insurance company acquires vs. applications that are filled out, is about 15% to 20%. InsurePoint.com has consistently been in the 46% to 48% range for the past three years, Behm said.

KEVIN FOGARTY/BRICKS AND CLICKS

Make yourself a start-up

YOU KNOW WHAT the worst thing about a gold rush is? The rush goes on long after the gold is gone. More than 80,000 people flooded California in 1849, but only a microscopically small number of them found any of the gold for which they crossed a continent.

The same thing's happening on the Web, which is luring hopeful, ambitious people out of corporate IT departments into exciting new dot-com jobs — jobs that offer the dream of quick riches through stock options. But today, there's little realistic chance of that dream coming true.

That wasn't the case corporate for the pioneering risk-takers who made the leap a few years ago. But we're now five years into the Internet revolution. Today, competitors are many; start-up successes are comparatively few. And a recent Ernst & Young study showed that half of Web start-ups have no plans to go public. So much for striking it rich with an IPO. But maybe you can start a gold rush of your own.

What if you gave your IT people the mission of launching your company into the soon-to-be-worth-trillions B-to-B e-commerce market, rather than keeping most of them focused on housekeeping and low-yield infrastructure jobs? Don't you think your crew would get fired up?

Big-time business-to-business projects require figuring out the complex relationships among large companies and their suppliers, especially when moving those relationships online means exploring a jungle of legacy technology in addition to the shiny new stuff.

What start-up can do that?

How about splitting off the business-to-business unit into a semi-independent organization and launching a tracking stock you can use for incentives, as Staples.com recently did when it separated from parent Staples Inc.?

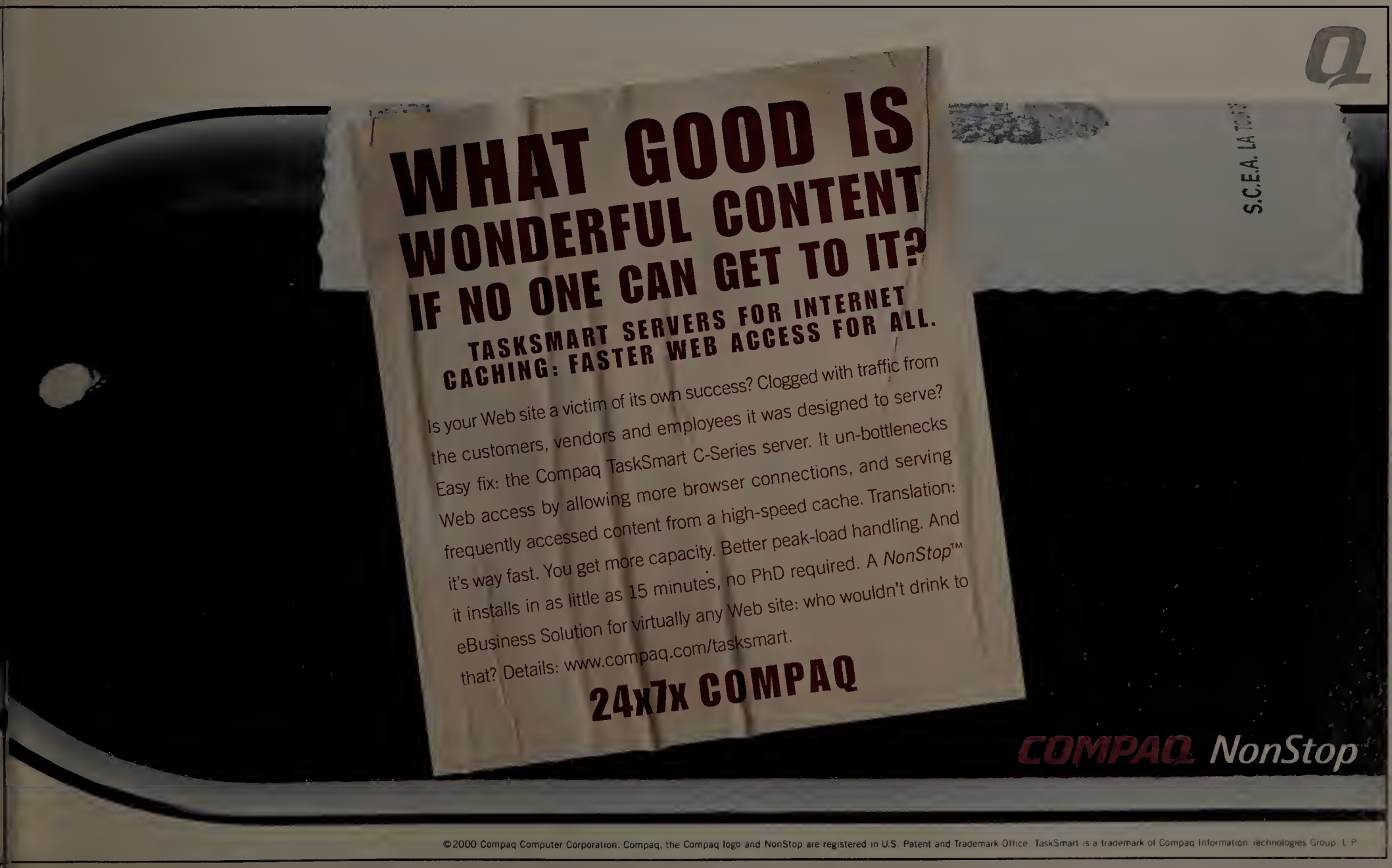
KEVIN FOGARTY is *Computerworld*'s business editor. Contact him at kevin_fogarty@computerworld.com.

Wouldn't that satisfy the stock option yen? Some of it, at least?

A tracking stock spun off by a stable company would be an easier ride than a dot-com stock but would still offer a good payoff. With that incentive, many corporate IT people might just decide that stability and a (barely) manageable workload make up for the sexiness of having .com on their business card.

There's not much you can do about IT people who are determined to head online, regardless of the risk. When the gold bug bites, some people just have to chase that dream. Millions of people also play the lottery every day. And lose.

But you can drive harder to turn your existing business into an e-business. That may keep your key people from succumbing to gold rush fever. And maybe yourself, as well. ◗



Construction Firm Builds on 'Tech Prowess'

At Black & Veatch, John Voeller's encouragement of innovation inspires his IT staff and gives his company a competitive edge

BY LIZ HORWITT

JOHN VOELLER can attest to the importance of having upper management's support for innovation. In fact, he's pretty sure that if he'd wound up at almost any construction company other than Black & Veatch (B&V), many of his ideas would never have seen daylight. "I have a lot of good friends in competitor firms whose innovative ideas were crippled or killed by limited vision at the top," he says.

During his 27 years at Kansas City, Mo.-based B&V, Voeller has had the chance to develop, implement and guide hundreds of innovative information technology ideas. In his current role as chief knowledge officer and chief technology officer, "one CEO and several business leaders fought for my freedom, and now the new CEO is doing the same," he says.

Management's willingness to give Voeller a free hand is particularly impressive considering his ideas are often radical departures for the construction industry and involve technology that won't hit the general market for years.

"John challenges people to reevaluate fundamentally what they are doing," says Matthew Phair, editor of equipment and technology at *Engineering News-Record*, a construction industry trade publication in New York. "He looks [at technology that will reach fruition] five, 10 years down the pike."

Voeller's vision has paid off big for his firm. "In an industry that's all too often stereotyped as low-tech, and where it's not uncommon to win a job based on low price, B&V very often wins on technical prowess," says Phair. Last year, Voeller received the Award of Excellence from *Engineering News-Record* for his pioneering efforts.

Still, "it's important to remember that it isn't just John Voeller; it's Voeller working for the right company" that has resulted in so many successful innovations, says Phair. "Upper management views him as a long-term investment and doesn't keep asking, 'What are you working on now, and how will it improve our bottom line in the third quarter?' "

NICK VEOROS

> This is an incubator for ideas.
>
> JOHN VOELLER, CHIEF KNOWLEDGE OFFICER AND CHIEF TECHNOLOGY OFFICER, BLACK & VEATCH

Voeller was a key player in the event that got B&V turned toward IT innovation as an ongoing competitive strategy.

Fifteen years ago, the company's CEO came to the IT organization with a simple — but at the time revolutionary — suggestion: Store all the information generated by construction projects in one place. IT responded by developing a huge relational database that became the basis of Powrtrak, a powerful project control and information tool that B&V uses internally and sells commercially.

Most important, the technologies allowed developers to distill information that most IT departments treated as static documents into a "metalanguage" that could be searched and sorted by a database.

Engineers designing a new power plant can use Powrtrak to call up detailed information about similar previous projects, down to man-hours and the number of nuts and bolts used. It eliminates most of the guesswork, boosts productivity and quality and reduces risk, Voeller says. It also saves money. Today, B&V projects typically involve just a few change orders (for changes that must be made to the design during construction) instead of thousands, saving up to $10,000 per order in paperwork alone.

Facilitating Change

In his role as chief knowledge officer and chief technology officer, Voeller acts more as mentor and facilitator than hands-on implementer. "He tries to take a backseat role, encouraging people," says Ken Smith, operations manager of B&V's advanced technologies division.

Yet from the backseat, Voeller has played a central role in fostering an innovative, risk-taking spirit among B&V's IT managers and at Black & Veatch Solutions Group, the for-profit IT division that B&V spun off in January 1998. Indeed, Voeller's take on innovation could be summed up as "If other people are doing it, it won't provide us with an advantage."

"He plants seeds," says Smith. "He identifies a technology he thinks will [be useful] and says, 'We ought to look at this.' He has a perspective from about 30,000 feet; he looks at the whole landscape."

The Value of Innovation

When Voeller finds information on a promising technology, he passes it on to one of the many bright, young "kids" who work for him, but he retains a mentoring role. "He's the kind of guy who drops you an e-mail with a word of encouragement," says Smith. "You wonder how he finds the time to always know what's going on, but he does."

Voeller has taken great pains to reward innovation — and not just ideas that B&V can directly use. "This is an incubator for ideas," he says. "[If] someone has an idea for a girls' computer game, I try to come up with funding, a mentor, something to support the person and their idea. People need to believe we think ideas are important, and not just ideas that might make us money."

The flip side of encouraging innovation is reassuring employees that they won't be punished if an idea doesn't pan out. "Permission to fail is key for a successful innovator," Voeller says. "You have to assume at least 50% of ideas will be wall-hitters. You have to absorb those failures and make sure you don't have a body count afterwards."

Failure is by no means the ultimate disaster, says Voeller. "The worst scenario is when an idea with potential business impact doesn't get a hearing [and] ends up on the street or, worse, at a competitor," he says. "Fire someone [when a project fails], and your innovation energy drops to zero." ◗

Horwitt is a freelance writer in Newton, Mass. Contact her at ehorwitt@world.std.com.

A Visionary's Vision

John Voeller, Black & Veatch's chief knowledge officer and chief technology officer, has a view of the world, and of IT in particular, that may seem counterintuitive to the average Joe. Here are three of his views:

COMMON WISDOM	VOELLER'S WISDOM
Go for state-of-the-art.	"If something is state-of-the-art, my competitor is doing it."
Go with the established vendor if at all possible, particularly when you're being innovative. It's less risky.	"I don't agree with differentiating between the high risk and the established vendor or technology. Vendors go out of business overnight. A competitor can come along and tank a product. Any of us can have a Microsoft or a Cisco or any of the big kids blindside our butt."
Buy off-the-shelf whenever possible.	"For us, building something ourselves is no more risky than buying from someone else. And if it's off-the-shelf, everyone else is using it. So we have no chance for competitive advantage."

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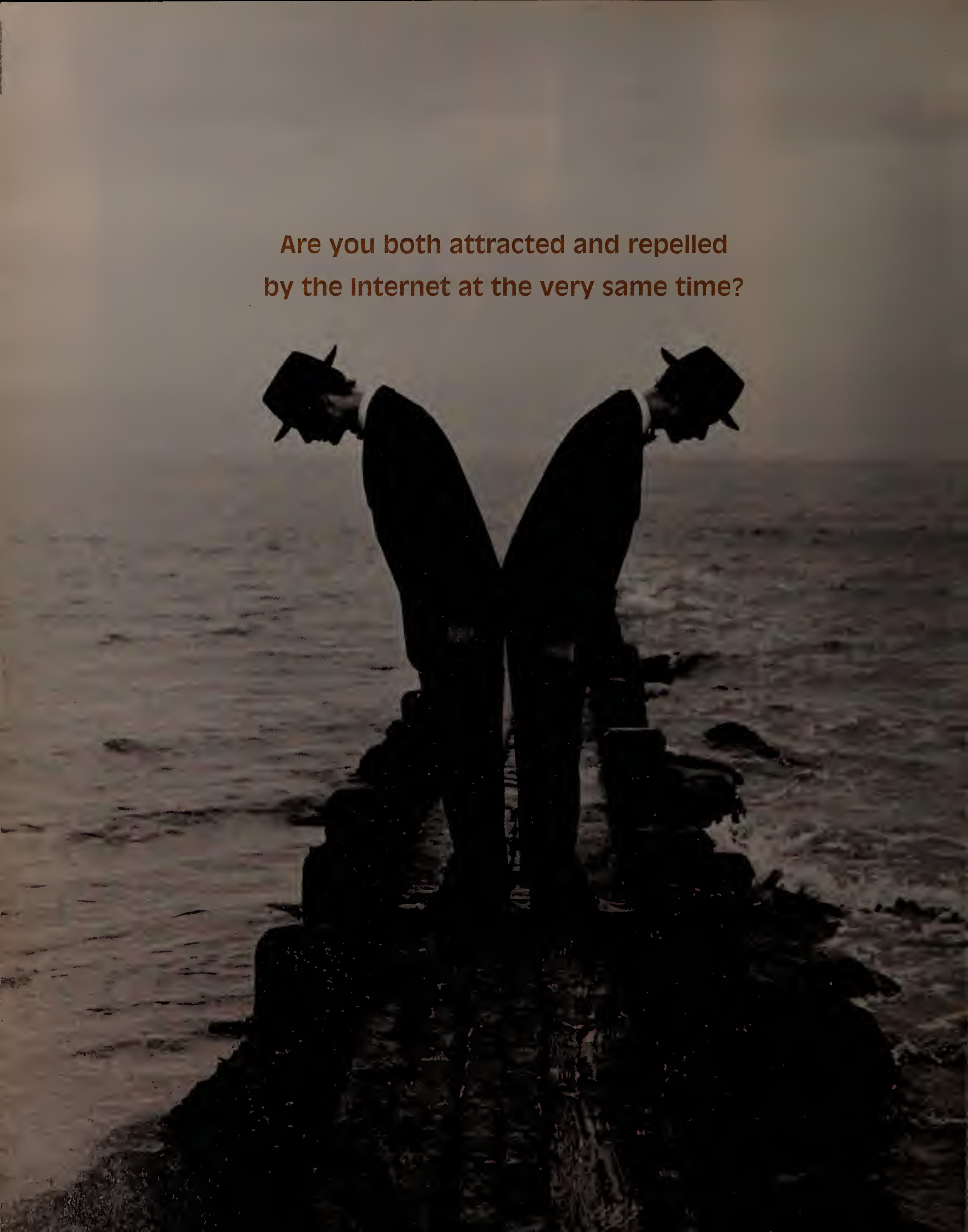
Are you both attracted and repelled
by the Internet at the very same time?



Read on to see how MCI WorldCom used VPN technology to help a pharmaceutical giant get comfortable with the Internet.

It's the classic double-edged sword. On one hand, the Internet opens your business up to billions of potential customers. On the other hand, it opens your business up to billions of potential hackers.

Not long ago, a pharmaceutical giant came to MCI WorldCom℠ with this exact dilemma. They wanted to make sure their customers would only have access to their products. But not their research. So we recommended they install a Virtual Private Network on top of their Internet and Frame Relay services. A VPN would keep their research separate from their products by using everything from firewalls to encryption codes. And because the data would run on our wholly owned, seamless global network,* we'd be able to monitor it from one end to the other.

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*Only MCI WorldCom Continuum owns the entire network between many locations in the U.S. and Western Europe.

MCI WORLDCOM

WORKSTYLES

What It's Like to Work at . . . Internet Start-up Gloss.com

Interviewee: Steve Mays, co-founder and director of technology
Company: Gloss.com, a pre-IPO beauty products e-commerce start-up launched in July
Location: San Francisco
Number of information technology employees: Eight
Number of employees (end users): "We were five people in a living room in May, and now we are 100 and growing."
Site volume: 50,000 to 60,000 visits per day on average; about 5,000 products online
Dress code: "It depends on the day. If investors are coming, we dress differently than when they're not here. Typically, it's casual."
Infrastructure: "We have two application servers and two Web servers, so we can take one pair off-line, post new features and test them, then make them live and take the other pair off and do the same. We host the site off-site, but we are managing everything ourselves."
How do you manage with just eight IT people? "With only two systems administrators – and I'm one – we are pretty damn busy. We've had five major revisions of the site since we launched."
Staff breakdown: "We have two admins and two desktop people who support our internal users. And we're building our development staff. We had been using [e-commerce consultancy] Novo Interactive for our development work, and we just started bringing that in-house in December. We hired four people over six weeks, and we'll have 22 developers by the end of the year. We'll also add to the administration and support staff."
What's a typical day like? " 'Typical day' is a funny concept in a dot-com. What's typical is that one day is not like any other day."
Hours per day: "We usually put in a 10-hour day, and it goes up from there."
Kind of offices: "We moved here in July and it seemed so big, but within two months, we were full. So it's a pretty crammed space, and we are taking extra leases in the building and connecting them together. We're in four different suites; half of IT is upstairs, and half is downstairs."
Who does what? "The way we operate, technology is at the top of the company. One of our top execs is a technologist, so the model here is different. A lot of dot-coms start with businesspeople who get funding and then hire geeks. Here, the geeks are at the top level of the company, and decision-making is based on what the geeks say."
Do new employees have to take pay cuts for the stock options? "The reality is you have to pay them what they were making before and give them stock. In this area, people are paying $1,500 a month rent and $20 every time they eat. So the financial realities are that you have to make a decent salary to support living here."
How do you dole out options? "There are set ranges with modifications. We want to be fair, but if someone has a hard-to-get specialty, then that changes things. I can't be more specific."
Last companywide/department perk: "We had launch parties in New York and San Francisco, and we have a belated Christmas party coming up."
Would employees feel comfortable e-mailing the CEO? Yes. "We aren't very hierarchical. We have some layers because no one person could handle the volume of stuff going on."
Quote: "Dot-coms are neither as bad nor as good as people say. It's not the situation most people are used to in corporations, where there's a certain comfort in the structure because you're not making up the rules every day. If you want to know your place in the universe, a dot-com is not the place for you. But, it's also not a slave-driving pit where there's no time for anything but work, work, work. The main thing is, do you like where you go to work every day? And I like it." – *Leslie Goff*

JIM CHAMPY

Tempering ambitions

I HAVE ALWAYS believed in the importance of ambition. It is, after all, the root of all achievement.

At the same time, I have also been aware — more so today — that ambition can have its dark side. It can easily lead to overreaching by an individual or a company. Reality is ignored and hubris takes over, while the need for competence is often overlooked and no longer rewarded.

As technology stocks soar to giddy heights, we're tempted to allow greed to guide our investments — or, in the case of a company's senior executives, the development of its capabilities. Remember that ambition can lead to loss, maybe disaster, if left unshackled.

Consider Apple Computer. It's doing well now, but there was a time when it almost sank. Apple's ability to deliver fell behind its ambition to educate the world.

But a carefully considered, tempered overreach is good, maybe even necessary, for survival. A senior executive, Internet leader or investor must bring an analytical intelligence to bear on the realities a company faces.

While conducting research for a book I just completed about ambition, I spoke with Gary Wendt, the former head of GE Capital. Under his leadership, GE Capital grew dramatically and soundly. What began as a company that financed the purchase of General Electric products expanded into a financial services powerhouse. Today, GE Capital contributes significantly to the parent company's business and profits. The policies Wendt followed exemplify ambition restrained by reality and common sense. He offers a textbook lesson in "good" ambition.

Ambition can lead to loss, maybe disaster, if left unshackled.

Wendt never drifted into Peter Pan's Never-Never Land while growing the business. It could have been easy to let his ambition fly out of control. Instead, he focused on keeping control and following certain rules he set, which are worth detailing.

■ **Time.** Not devoting enough time to the organization's needs can lead to impatience, cutting corners and potentially critical misjudgments. The basic question an executive must ask is, what can be accomplished in the available time?

■ **Talent.** When you're running a global business, talent is of primary importance. You need people who can grasp and adapt quickly to the realities of unknown or foreign situations. Truly gifted managers are scarce, but it's worth a leader's time to find them.

■ **Momentum.** When a manager no longer runs his company with ambition — and the vision or passion it entails — a business can slow down, losing its sense of urgency and thus its momentum. Wendt sees momentum as necessary to maintain the energy and conviction an executive needs to grow his business.

■ **Risk.** The bigger a company becomes, the more difficult it is to judge risk. So a leader must watch for the potential threat of bigger losses. That doesn't mean that he should lose the appetite for risk, because you can't grow a business without it. But risk should be carefully considered before it's undertaken.

These precepts are wise words and point to the traditional path toward financial success. They don't allow greed to become part of the equation and, they apply as much to the investor about to buy stock in a technology start-up as they do to the executives who will lead it.

You certainly can't run a business without a focus on financial performance, but when money and profits become a company's only objectives, senior executives run another kind of risk: People involved in such an enterprise will eventually lose their passion for the business.

Without something aside from stock price to focus on — product quality, for instance — an enterprise can become an empty shell. Unfettered, greed-motivated ambition can push aside good ambition and may be one of the greatest risks that threaten technology companies today.

While technology is a great way to realize a company's financial goals, it's ambition that must always be kept in balance. ◗

Champy (JimChampy@ps.net) is chairman of Perot Systems Inc. in Cambridge, Mass. His new book, The Arc of Ambition, *was released this month by Perseus Books. His newspaper columns are syndicated by Tribune Media Services.*

MOVING BEYOND THE RACIAL RAVINE

African-American IT pros look to bridge the U.S. technology gap.

How can the information technology profession close the gap between affluent people and impoverished members of minority groups with little exposure to technology or opportunity to move into the field? One organization working toward that goal is Black Data Processing Associates (www.bdpa.org) in Largo, Md., a leading organization of African-American IT professionals. We invited four top BDPA officials to discuss their work with **Allan E. Alter** *and* **Martine Severin.**

What have you found to be the most effective ways to bridge the racial ravine between computer haves and have-nots?
George K. Williams: Going into the schools and sharing our knowledge about computer technology while serving as mentors and role models.
Yvonne Sharpe: Allstate was one of the first corporations to partner with the national BDPA, but my experience is with the Chicago inner city. We work at all levels. We support a computer competition for high school students, an intern program for college students, and have computer learning centers in churches on the South Side geared for first-graders through high school seniors.
Curvie Burton: At the computer competition at our annual conference, teams from around the nation compete to show what they know about IT. They win prizes and scholarships but also get to interact with IT professionals. The overall program touches more than a thousand students nationwide, and it's growing.

What gets young people most excited about careers in technology?
Burton: The best programs are engaging, interactive and allow them to exercise their creativity, but [they] also provide structure, so that they learn not just IT but about life.

What obstacles have you encountered?
Williams: Making the time. Everyone is so busy doing their respective jobs. And making sure that companies understand what we're trying to do. Once we've aligned the goals and objectives, there really are no obstacles.
Burton: Resources and desire are the biggest obstacles. By resources, I mean both financial resources and skilled technology advisers and volunteers. We've found that schools in our cities don't necessarily have the budgets or know-how to deploy technology properly.
Joe M. Thompson: The BDPA is also closing the gap in [recruiting] IT executives. Some middle and senior executives in the BDPA teach younger managers, to help them enter jobs in industry, government and education.

Given the shortage of workers, this should be the best of all times for your efforts.
Williams: There's probably no better a time. At the same time, we are somewhat behind. We must recognize the country's changing demographics and raise awareness of IT for this future workforce. Companies should set goals and allow their employees the time to do community service work as part of ongoing and long-term recruiting efforts.

Right now, only 3% of CIOs are African-American. Are you happy with that percentage?
Thompson: The federal government and private sector would like to have a diverse workforce, but there just simply have not been the numbers. There has not been the development opportunity. One must have mentors and people to talk to and advise you.
Williams: There is a well-qualified, educated and experienced African-American technical force in this country. I am concerned that more have not reached the senior ranks in their field, but I have confidence it will change as the population continues to change.

And yet you've written that many human resources people complain they can't find minorities with the right skills.
Thompson: We have résumés from hundreds of IT professionals who are ready to go to work tomorrow. Many of them are employed; they are not just looking for jobs but [for] properly matching jobs.
Sharpe: Of Allstate's 50 IT intern slots, 50% are to be filled through the BDPA. We have not had any problems in getting 25 qualified students each year. Qualified minorities do exist, but if you are relying on a single individual in HR to go to this or that university to find minorities, you're not going to get the biggest bang for your buck.
Burton: Let's look at another way many IT jobs are being filled: visas. We could fill those same jobs, without language barriers, training in American business practices or providing housing and transportation, if we give American youths, entry-level managers and middle managers the same kind of start. It will reduce costs and increase productivity at a much faster rate.

Sometimes stories on African-Americans in IT generate angry letters. Some argue that IT is a meritocracy and that African-Americans and other minorities shouldn't receive any special treatment or affirmative action. What would you say to them?
Thompson: Among CIOs, affirmative action is simply not an issue. There is such a dearth of talent and a need for skills that special treatment is required by everybody for everything.
Williams: The question is, do you have a talent? That's what all companies are looking for. All anyone can ask for is the ability to compete without fear of prejudice or preferential treatment to others. We want to compete, and we're not looking for any favors, and let the best talent win. We've evolved as a society. We recognize that people are people. While we still have pockets of old-time racism, if our country recognizes a problem, we should have enough sense and hopefully enough resources to address it. ◗

ANN STATES

BDPA members, from left:

Joe M. Thompson (jmt2@sylvaninfo.net), the first person appointed CIO in the federal government, is founder of Thompson & Thompson International, a business technology consultancy in Heathsville, Va., and an outside director of the BDPA.

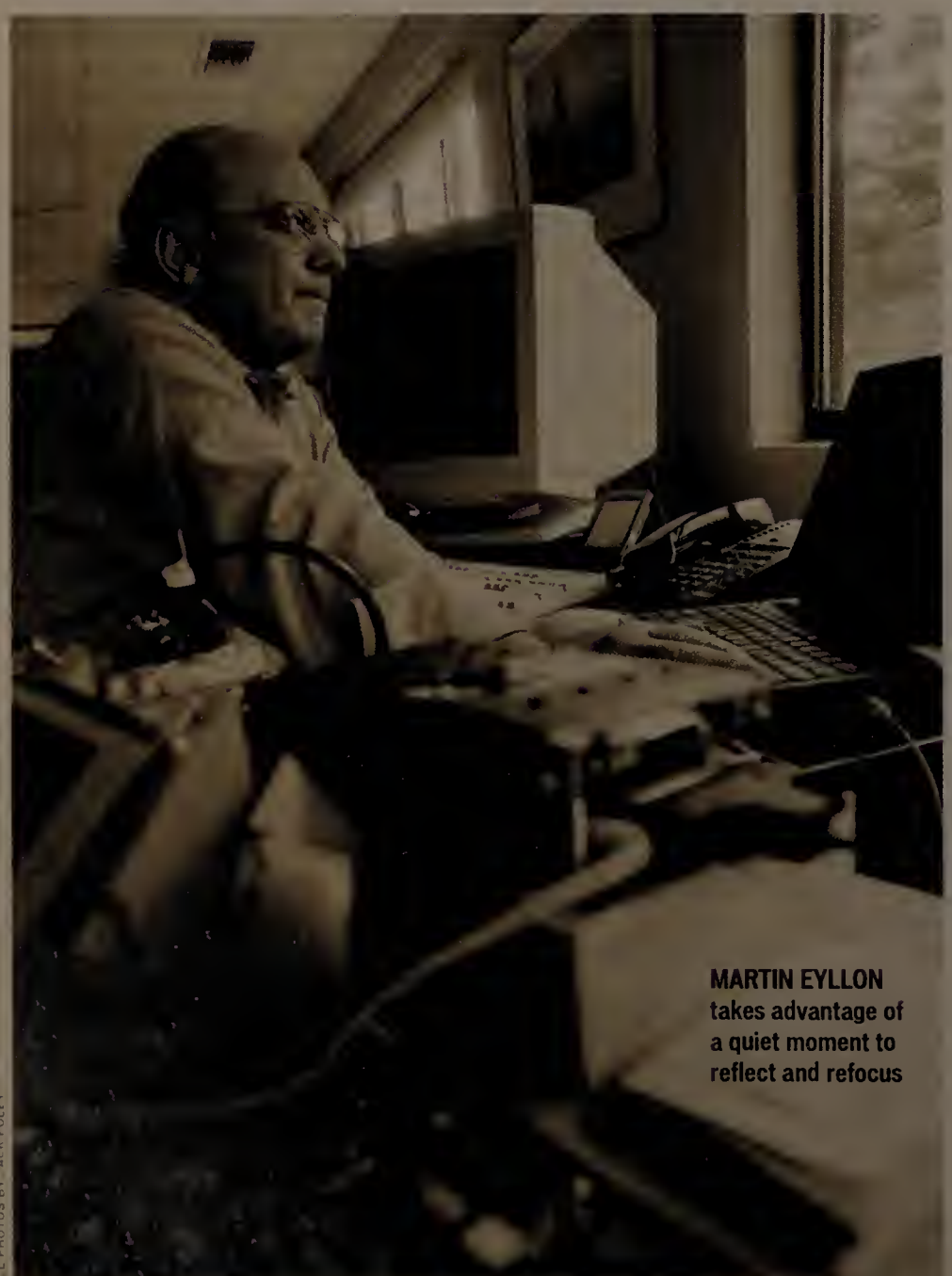
Yvonne Sharpe (ysharpe@allstate.com) is systems director, information management strategy, at Allstate Insurance Co. in Northbrook, Ill., and chairman of the board of the BDPA Education and Technology Foundation.

George K. Williams (georgekwilliams@email.msn.com), immediate past national president of the BDPA, is a senior account executive at TRW Systems & Information Technology Group in Cleveland.

Curvie Burton (curvie.burton@eds.com) is chief of staff at EDS Information Solutions in Plano, Texas, and an outside director of the BDPA.

Alter is Computerworld*'s former department editor, management. Severin, a former* Computerworld *intern, is a student at Wellesley College in Wellesley, Mass.*

A Day in the Life of an



MARTIN EYLLON takes advantage of a quiet moment to reflect and refocus

A.L. PHOTOS BY JACK FOLEY

BY LESLIE GOFF

A DRIVE through the historic hamlet of Concord, Mass., to the offices of Binary Techniques Inc. feels more like a leisurely spin in the countryside than a commute to work. Colonial homes line the town's winding Main Street. Very little traffic detracts from the local scenery. And just a few yards from Martin Eyllon's independent consulting firm, located in a building that looks more like a ski lodge than an office complex, the road passes over a green pond filled with water lilys and surrounded by tall, fragrant plants waving in the gentle breeze. It's a spot Eyllon likes to walk to in the afternoons when he has to gear up for some serious debugging or programming.

Eyllon, who has been consulting for 13 years, has carved out a lifestyle and a workstyle that epitomizes the best that independent consulting has to offer. The serene surroundings underscore a certain calmness that he brings to his meeting-filled days.

Like Thoreau and the other literary figures who populated Concord some 100 years before him, and the Minutemen of the American Revolution some 100 years before them, Eyllon is truly independent, living a deliberate, self-determined life. He recently allowed *Computerworld* to tag along and peek inside a typical day.

8:30 a.m.

Eyllon arrives at the office, having left only seven and a half hours earlier. He had worked until 1 a.m. on a client proposal for his lunch meeting today, but when he was ready to print, the printer wouldn't cooperate. He e-mailed the document to himself and printed it out at home before finally going to bed. With two client meetings and a lunch appointment with a consulting partner scheduled, he takes it easy in the morning as he prepares. This, he says, is his favorite part of the day — when it's quiet and he can refresh and refocus. A recording of "The Brandenberg Concertos" plays softly on his CD-ROM drive.

The phone rings. Eyllon answers, listens, nods. "I've got a concept on paper," he says. "Yes, I think it's a done deal. . . . I put something together that looks halfway like a catalog. I think it's nice looking. . . . They want to have their own domain."

Eyllon is talking to a colleague he'll meet later for lunch. The two are working on a complicated Web site, one that represents the type of work

T Consultant

Eyllon would like to do more of. It's an ambitious project that has already required several meetings with the client and a utility company, and still hasn't been firmed up. They agree on a time and place for lunch and hang up.

Eyllon, who describes himself as in his early 50s, started consulting not long after earning a master's degree in computer science from Brooklyn Polytechnic University. Originally from Romania, he still carries the slightest of accents. A soft-spoken man, he seems at times more like a college professor than a computer consultant.

10 a.m.

Eyllon drives his green Saab 9000S to his first meeting, which is at the small research and development facility of Williamson Corp., a maker of industrial temperature-measurement devices that's also in Concord.

Williamson is family-owned, and the environment is even more casual than business casual. Eyllon has an ongoing relationship with the company, and Vice President Bill Barron greets him congenially as they sit down in a conference room to discuss the project.

Barron starts by updating Eyllon on where the project stands since they last met. Eyllon's job is to develop an application that will be integrated into Williamson's products, allowing customers to hook their field instruments into a diagnostic program on a remote PC and view the data with a graphical user interface front end. Eyllon had originally specified a program that would tie into a database back end, but as his conversation with Barron progresses, it becomes clear that Williamson wants to scale back the initial deliverables.

"We're on a shoestring budget, but I think we have the basic structure in place," Barron says. "Knowing how we've worked together in the past, if we could get this done in a week [of billable hours], that would be great."

"That will be tough," Eyllon says, trying to keep things open-ended.

"We can take a quick-and-dirty version," Barron responds. "We can call it beta software when we release it to customers."

Barron, whose company has suffered some recent setbacks, continues to reiterate that the project's original specs must be scaled back for the time being. But the whole negotiation is so low-key, it's hard to tell that a deal is being made. Once in agreement on the deliverable, Barron takes Eyllon downstairs to the engineering area to take a look at the instrument and a related application that's already in place. Across the shop floor a radio plays "Let's Dance."

Despite the delicate push and pull, meetings like these, says Eyllon, are one of his favorite parts of the job. The beginning of a new project, when "you're full of hope," is rejuvenating. "I guess it's really why I'm still in the business," he says.

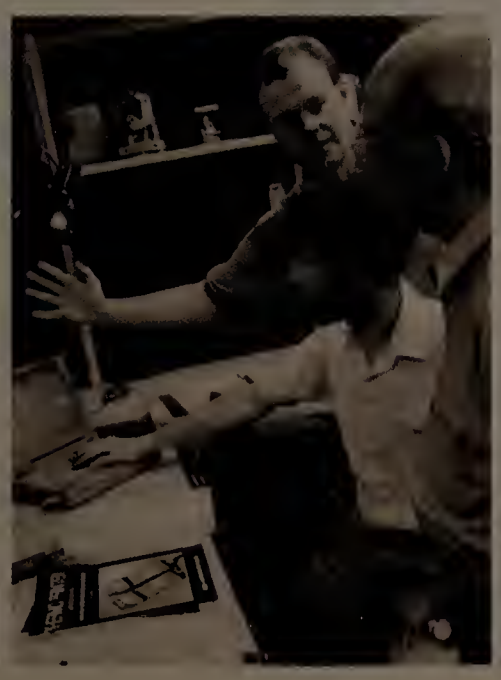
Noon

At the China Trade Restaurant, Eyllon and Vijay Lathia, president of V. R. Tech Inc. in Westford, Mass., order lunch specials and go over their respective parts of a presentation. The two originally met when Lathia was employed at AT&T Bell Laboratories, and Eyllon consulted on a project with him. When Lathia went solo, they reconnected.

Since they last met to discuss the proposal they're working on, each has been researching vendors of customer management software, which will be a big part of the project. Lathia's expertise — in networking and "Internet plumbing," as he describes it — will complement Eyllon's experience developing online catalogs and e-commerce applications.

"The problem with this client is that they have an idea about the Internet, but they don't really know," Eyllon says. "They're approaching it like, 'We have a solution — now show us a problem.' It has been a difficult process to get them to put their requirements in writing."

He holds up a sheet of paper with a hand-drawn diagram and a series of scribbled notes. Eyllon and Lathia both laugh, but they know this project could



be big, and they're willing to keep gently guiding their client along. "They're pretty smart guys with good business connections," Eyllon says. "They've got a good idea — business-to-business e-commerce is up-and-coming."

When not talking about work, the two talk about their kids. Eyllon's three children, ages 16, 14 and 12, are always taking apart his home computers. The machines used to be networked, but the kids have dismantled that through their tinkering. Lathia's son is hooked on PC games and has established a Yahoo GeoCities Web site where he publishes tips and tricks. He's getting as many as 2,000 hits a day and wants his own domain. Lathia inquires as to just how much that would cost him — Eyllon is a reseller of Web space and could set it up for him.

They wrap up lunch with a review of what to do next, before they meet with the client yet again next week.

1:30 p.m.

Eyllon runs into his next appointment, John Toomy, in the hall of his office building. Toomy runs Laser Technologies Inc., a printer service and supply company across the hall, and he wants to launch a Web site. Toomy postpones their appointment for another half-hour, giving Eyllon time to sit down at his computer for the first time all day.

2 p.m.

Toomy comes over from across the hall to discuss the potential Web site. Eyllon walks him through his portfolio. Toomy starts out simple and gets grander and grander ideas as the meeting progresses, ending up with a vision of his dream site.

Eyllon seems to have a deal, but no money was ever discussed.

"Consultants are not great salespeople," Eyllon says. "I guess we have a deal. He wants to think about exactly what he wants to do. But he knows more than most people do — he knows *why* he wants to do it."

3 p.m.

With the day's meetings behind him, Eyllon now needs to settle in for some serious debugging on another client's application. Although he finds client meetings motivating, they also create some uneasiness.

To make the mental transition from meeting mode to programming mode, he takes a walk down the country road that leads to his office, pausing at the pond to absorb the view and the tranquility. A great blue heron takes flight low over the water.

"Meetings generate more anxiety, especially meetings with customers," says Eyllon. "Walking helps bring that down, and little by little I get more into what I need to be doing next. It's amazing how easily you can get back into the work frame of mind when you need to."

3:30 p.m.

Back in the quiet of his office, Eyllon settles in at two computers. He's hoping to figure out exactly why the program he's working on keeps crashing his laptop.

This is the solitary part of consulting. After the proposals, the pitches and the lunches, in the end it all boils down to getting a program to work for a client and meeting the deliverable.

It's been a productive day, but for all his organization, Eyllon says he, like everyone else, has tasks that continually fall to the bottom of his to-do list.

"Filling out the 941 tax forms, accounting issues — those are the things that always bounce to the next day's to-do list," he says. "And I don't even put 'clean off desk' on the list anymore." The day before, he had a professional service come in to tidy up the office.

5 p.m.

It's Friday, so Eyllon will end the workday a bit early. He's planned a family outing to Massachusetts' North Shore. ◗

Goff is a freelance writer in New York. Contact her at lgoff@ix.netcom.com.

Anyone Need a Consultant?

BLACK/TOBY

IT EXECUTIVE FRANK MONTELEONE: To work successfully with consultants, modify your management style and understand your objectives

Do you want 'Lennon and McCartney'? Or will a 'Napoleon' do? An IT veteran lumps consultants into five categories and offers advice on how to work with them. By Frank Monteleone

With an ever-growing need for information technology resources, consultants are hanging out their shingles in record numbers. In the 21 years I've been in IT, I've worked with different types of consultants and consulting companies, and have learned that consultants can either help make or break a project. So choose them wisely.

A consultant can usually be placed in one of the following five categories:

Bait-and-Switch Consultants

"Have I got the perfect consultant for you!" The consultant starts his work and turns out to be great. Before you know it, reinforcements arrive and the key consultant is pulled off your project to do the same thing to another client. Recently, we hired some bait-and-switchers. A consultant came in and did a great job. All of a sudden, we had 10 consultants doing the work that was supposed to have been done by just one. And none of them had the experience to complete the task.

'No Problem' Consultants

"Sure, I can do that . . ." These consultants are the "No problem" consultants. How often have you gone for the low bid, only to have the consultants come in over budget? "No problem" consultants will promise you everything but ignore time and budget constraints, and find later that they can't deliver.

Lennon and McCartney

These are your partner consultants, like John Lennon and Paul McCartney. They're willing to take joint ownership responsibilities for a project and can complement your work skills and experience. On one of my projects, I had a partner consultant, Laura Werner (see story to right). While I had the strategic direction for the operations center, Laura was able to take those ideas and create a plan to implement them. We operated as a team, working off each other's strengths.

Nuts-and-Bolts Consultants

These are your technical specialists. Just set them on a specific task for which you don't have the in-house expertise. In many cases, these consultants begin to blend into your background and become a long-term "in-house" resource.

Napoleonic Consultants

These consultants always say they know how to do the job better. They come en masse to run a large project, protected by their employer, a large consulting firm. But the company leaves them to run the project, only to find it later in ruin.

I've seen complete projects outsourced to Napoleonic consultants who insist on being totally in charge. They get out of control because no one was watching them properly.

Lessons Learned

You can be successful using any type of consultant if you modify your management style and understand your objectives. To work successfully with a consultant, there are a few things you can do before beginning a project.

1. Understand that consultants don't have all the answers. They need to be managed carefully, but too often, companies think they can off-load a project to consultants and let them go. By actively managing their progress, you can ensure that a project is successfully completed. Consultants from large companies often have the knowledge and resources necessary to complete a project. They just need guidance to use those resources to your benefit.

2. Determine the scope of work that needs to be done before starting a project. Make sure you understand the plan of action before the consultants begin work. If you're hiring a consulting company based on a particular consultant, make sure you understand his involvement and what will happen if he's pulled off the job. This will help you succeed with a bait-and-switch consultancy.

3. Have a consulting firm give you an estimate of the time and budget necessary to do the job. While most consultants won't offer a fixed bid, they should be able to give you an estimate of the time required. Examine this to ensure that the scope of work can be done in that time. "No problem" consultants need to be managed carefully. Find out up front how they will handle change-management requirements. You also want to stop the urge to complete new requests "under the table." These will get done, but it will add to the time line and budget.

4. Interview consultants. Make sure there's compatibility between their workstyles and yours. Are you hiring a Lennon to complement your McCartney? Just because you like a consulting company doesn't mean you'll like the assigned consultant.

Monteleone (fmonteleone@Pactiv. com) is executive director of IT at Pactiv Corp. (formerly Tenneco Packaging) in Lincolnshire, Ill.

A Consultant Offers Advice to Her Peers

BLACK/TOBY

LAURA WERNER: Successful consultants listen

When it comes to consultants, understand that one size doesn't fit all. For more consultants to be successful, they have to understand that all companies are different. Work closely with clients to understand what they want before you give them an answer. In other words, listen. One area in which IT notoriously suffers is in communication with end users. If you excel in this area, you'll find that the added value will have the companies running to you.

And to companies hiring consultants, I have this advice: Consultants are like weeds. If you leave them unattended, they will grow and take over all your resources and budget. Take out the bad ones and manage the good, and you'll grow a successful project.

Werner (werner@ismprojects.com) is president of Integrated Systems Management (*www.ismprojects.com*) in Buffalo Grove, Ill.

Competitive Intelligence

BY MATT HAMBLEN

EVERYBODY working in the competitive intelligence (CI) arena can tell a story about being asked over cocktails if they are just corporate spies.

But there isn't really any cloak and dagger, even though the field has attracted a few former members of the CIA.

"I have a CIA background, and that's the best school for training in intelligence, so it makes it a little bit hard to tell people that CI isn't spying," says Ken Sawka, vice president of consulting at Fuld & Co., one of the most prominent CI consultancies, in Cambridge, Mass. "But I make it clear that you don't do wiretapping or paying off sources, and a CI professional mainly assesses the external impact on a business decision."

Not Spying

So if CI isn't spying, what is it, other than watching competitors and government regulators who might make a move that could cripple a company?

CI has developed in recent years in many Fortune 1,000 companies as a line of business activity, sometimes as a central unit of researchers with marketing or accounting expertise who advise top management. It can also involve heads of business units that meet regularly.

CI professionals gather data and analyze it using many software tools and systems on the market. But they also interpret the data for upper management, affecting decisions about, for example, whether to withdraw a product dominated by a competitor or to close a plant that produces products that aren't expected to be profitable.

At all stages in the CI game, the information technology department is vital, helping coordinate information gathered from voice mail or e-mail systems, storing it and organizing it, and helping business units move it around for human analysis, analysts say.

IT workers "can contribute significantly to the CI effort by gathering information on competitors when they interact with other IT people at conferences," says analyst Helen P. Burwell, president of Burwell Enterprises Inc. in Dallas. "And a company's information technology can have a great impact on how they perform."

Analysts urge IT leaders to get involved at the ground level when a company creates a CI unit to help assess software tools and decide which budget the tools will be paid from. IT managers are also vital to protecting security by helping create rights and firewalls to determine who has access to CI, analysts add.

CI Projects

Analysts say IT departments in U.S. companies are working on a wide range of CI projects. Some are operating toll-free call-in lines so frontline salespeople can quickly make a call while on the run to describe what a customer just told them about pricing on a competitor's product. Others are testing software agents that search electronically for information.

Fuld & Co. is even working with Dow Jones Interactive Inc. in New York to add CI analysis to Dow Jones' standard fare, said Leonard Fuld, president of the company.

But Fuld says he worries that business managers and CIOs will mistakenly believe that tools and customized news service subscriptions will substitute for analysis, which must remain a human function. "CI is a management and organizational behavior issue more than a technology issue," Fuld says. "Technology helps, but it's not a panacea."

When CEOs get involved with creating CI programs and the process is given the attention it deserves, companies can gain tremendously on competitors, according to analysts and practitioners.

Business Benefits

At Hercules Inc. in Wilmington, Del., the $3 billion chemical firm set up a business intelligence (BI) team 18 months ago partly as a response to its difficulty countering competing chemical products, said Rob Sherman, manager of corporate business intelligence. Sherman says that although he can't quantify its value, the BI effort has definitely benefited Hercules.

"Unknowns such as the tactics and strategies a competitor might employ to counter our new product introductions were always known to be critical, but prior to BI, we never had a technique specifically suited to address them," Sherman says.

With the Hercules BI team — a decentralized group of six business unit managers who report to Sherman — analysis a year ago showed an oversupply of a chemical Hercules and its competitors were making. The BI team recommended the politically unpopular solution of closing a plant producing the chemical in the U.S., and it was quickly shut down, he said.

Because Hercules' BI team must act quickly to gather and analyze information, its IT needs are leading edge, and Sherman says he thinks an IT person needs to be assigned to the BI effort.

BI at Hercules has touched database integration, password administration, access to the Internet and intranets, database replication, server access, Web design and e-mail traffic load. "A dedicated IT insider can make navigating this territory much easier ... and foresee problems much earlier," Sherman says.

DEFINITION

Competitive intelligence (CI) is the process of monitoring the competitive environment. Businesses have always assessed their competitors and the outside business environment. But these days, CI is a much more organized movement in which practitioners not only gather data in an ethical, continual and systematic way from many sources, but also draw conclusions to present to senior decision-makers. IT professionals support all the systems used to gather and compare data and contribute to the source material.

The Intelligence Cycle

Analysts break down the gathering and use of information into steps, as described below. There are many software tools that can be used for the first four steps, but evaluation of intelligence is still beyond the reach of off-the-shelf tools.

1 **DEFINE INTELLIGENCE REQUIREMENTS**
Each new intelligence-creation task should begin with clear executive guidance on precisely what information is needed and when it is due.

2 **COLLECT AND ORGANIZE**
After the intelligence tasks are defined, experts normally assemble a "collection plan." Public and published sources are scanned, and data is captured from primary sources. Tools should produce summaries based on significance.

3 **ANALYZE**
Analysis and synthesis are the keys to the game. Successful analysis draws on specific information in a disciplined collection process to look for trends and directions.

4 **REPORT AND INFORM**
Often, synthesis is best done when the analyst must report the results. This is commonly done in word processing, spreadsheet or graphic presentation applications.

5 **EVALUATE**
This phase of the intelligence cycle measures the utility and value of the intelligence produced. Was it used? What impact did it have? What money did it make or save, and what risks were avoided? Experts say off-the-shelf products can't answer these questions and tools must be custom-built.

SOURCE FULD & CO., CAMBRIDGE, MASS

■ *Are there business terms you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.*

Dear Career Adviser:

I am a "switch hitter," with 60% Oracle database-administrator consulting and 40% Unix system-administration and NT consulting. I travel three weeks per month. For two years, I've been working for a vendor, implementing its products. I write custom emitter-coupled logic (ECL) [a subset language of Tool Command Language] scripts that access Oracle Dynamic Performance Views for information, parse it, display it in various viewing formats for database administrator usage and display information in HTML format for Web page display.

I have heavy networking experience, I'm a Certified NetWare Engineer and am also formally trained in Oracle database administration, backup/recovery and Oracle networks. Do I meet the criteria for a senior Oracle database administrator? What should I do from here?

— BOLDNESS IN 2000

Dear Boldness:

Although you are only a two-year Oracle database administrator, you are really more valuable than the average junior Oracle administrator because you have a solid networking background plus a mix of Oracle and Unix skills, which is what most corporations want, says Patty Taylor, senior vice president of consulting at Smartsource Inc. in Santa Clara, Calif. Your ECL experience and ability to travel also make you a candidate in demand.

To become a project architect or senior database administrator, you would need to stay with a project over its full life cycle. That would increase your credibility and help you become an expert consultant once you show you've endured the rigors of testing the systems you developed.

Dear Career Adviser:

I am a seven-year programmer with the opportunity to join a relatively new company specializing in e-commerce networking infrastructure. They just went public. How should I evaluate this opportunity since I appear to have missed the boat in terms of its initial public offering?

— MAYBE MISSED THE BOAT

Dear Maybe:

Essentially, you're asking both a math and a career question. No doubt you're enticed by the $39 billion worth of pre-IPO options that are about to be exercised this year, and you're correct that your best chances for a huge payoff come from holding pre-IPO stock. However, according to Jay Ritter, Cordell Professor of Finance at the University of Florida in Gainesville, Fla., "the chance of a big winner on a point-forward basis is low, and the upside potential is especially low if the valuation of the company is already high."

But regardless of IPO status, technical careers get good long-term boosts from work done in high-profile companies that are more than "one-trick ponies," which offer neat technology where you personally do "cool" work. It's this sentence that should become your mantra.

Even recently public companies like Commerce One Inc. or AskJeeves Inc. have also shown post-IPO stock splits and excellent market strategies that reward later hires, as do even later-stage high-profile networking companies whose stock is on an upward curve. In short, given the volatility of dot-coms, you either must guess lucky or just work on something so cool that no matter what happens, you win.

FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at **www.computerworld.com/career_adviser.**

Dear Career Adviser:

I am here from another country with a degree in computer science from a well-known university. I work as a software architect. But when I open my mouth, people say they can't understand me. Please rewrite my letter if necessary. I am embarrassed. Thank you.

— SPEECHLESS IN SEATTLE

Dear Speechless:

Many technical people from abroad are focusing on this issue to advance from individual contributor to team manager roles, where communication is key. First, understand that many adults who learned English mostly through reading have this problem and that after age 6 or 7, our capacity to learn new sounds outside our native language diminishes.

David Kertzner at ProActive English in San Francisco provides speech training to technical professionals. He says that for better speaking abilities, you'll need to capture the sounds, patterns and rhythms of spoken English. Because nervousness tends to speed speech up, first and foremost slow down your speed of speech in both face-to-face and, particularly, phone communication, where people can't see you for visual cues. Practice the rhythm patterns and breath groups of spoken English.

English as a Second Language classes will probably be too basic, so contact a college or university speech department to find an expert who specializes in accent reduction. Budget at least three to four months of one- to one-and-a-half-hour classes once or twice per week. ◗

BRIEFS

E-Tickets This Spring

Ticketmaster Online and CitySearch's online offering, Ticketmaster.com, has plans to announce a new Internet service that will enable customers to purchase and download printable tickets via their PCs. Ticketmaster, based in Pasadena, Calif., intends to have the electronic tickets available sometime this spring.

Mortgage Services for H&R Block Site

H&R Block Inc. has named E-Loan Inc., an online mortgage company, the sole mortgage services provider for its site, *www.hrblock.com.* Known primarily for tax preparation, Kansas City, Mo.-based H&R Block will expand its online investment services by adding mortgage resources to its home page. The agreement will enable customers to use Dublin, Calif.-based E-Loan's array of mortgage services and debt management tools, which include customized rate quotes, tax estimation calculators and loan rate notification via e-mail. Financial terms weren't disclosed.

Autobytel.com To Sell Nationwide

Autobytel.com Inc. has announced that it plans to sell cars nationwide over the Internet. The Irvine, Calif.-based company will provide customers with the ability to browse through a real-time program that includes instant pricing, financing, insurance and trade-in options. Home delivery is also available. Depending on the state and the gross selling price of the automobile, the fee for an Autobytel dealer is between $100 and $300.

Legato Cancels Acquisition Deal

Without specifying a reason, Legato Systems Inc. in Palo Alto, Calif., has announced that it has canceled an acquisition deal it had with Ontrack Data International Inc., a data recovery software and service provider in Eden Prairie, Minn. The $134 million cash and stock transaction was signed approximately two months ago.

Cerf Joins Board

Vint Cerf, a pioneer in the development of the TCP/IP protocol and the foundation of the Internet, has joined the board of directors at Nuance Communications Inc. The Menlo Park, Calif., firm develops natural voice interface software for telecommunications, enterprise and Web-based systems. Cerf is currently senior vice president for Internet architecture and technology at MCI WorldCom Inc.

EMC Buys Terascape

Hopkinton, Mass.-based EMC Corp. has expanded its software portfolio, purchasing Terascape Software Inc. for slightly less than $50 million in cash. Terascape, in Needham, Mass., is a private developer of storage-performance software. EMC's software focuses on performance management for Oracle Corp. database environments.

Strong Demand for Bundled Services

Washington-based market research group The Strategis Group has reported that business demand for bundled telecommunications services is strong. Of businesses polled for a report on bundling services, 66% said they were interested in purchasing bundles of at least two services such as local telephone, long-distance telephone, cable TV, satellite TV, Internet access, cellular service and paging.

TECHNOLOGY

R&D GEMS

Universities are charting a course to the post-PC era. We present three of the coolest IT projects at university research and development labs, where the future of computing is being charted. ▸ 62

WEB BANDWIDTH

Moving from green-screen to Web-based, graphical applications can zap response times if you don't beef up your networks. Millipore Inc. describes how and why it upgraded its network pipes to run the Web version of Oracle's enterprise resource planning applications. ▸ 59

INTEGRATION CHALLENGE

IT managers hope that Concord Communications can combine its software with the tools produced by FirstSense Software. But if its purchase of FirstSense is to work, Concord will have to seamlessly integrate both product sets while competing with bigger vendors. ▸ 56

EMERGING COMPANIES

Netmosphere's Action Plan project management software uses the Web as a reporting and collaboration center. That focus lets everyone participating in a project stay on top of things. ▸ 68

LINUX CLUSTERS

Veritas will announce plans to port key products, including Veritas Cluster Server, to Linux. But questions remain about how the open-source community will react to clustering. ▸ 58

HIRING FOR TELECOM

Faced with a widening skills gap and growing staffing needs, the telecommunications industry is hiring more nontechnologists and looking for candidates in nontraditional areas. ▸ 72

HANDS ON

Computerworld reviews The Brain. It's a tool for managing information by visually organizing resources on a computer or the Internet according to what makes sense to you, completely independent of the file system. ▸ 60

QUICKSTUDY

A Web host is either a company that provides Web space for others or an organization that hosts its own site. The network infrastructure and applications used to operate the site are the two major elements in Web hosting. ▸ 61

BUSINESS ONLINE

Customers want to speak to people even when doing business over the Web, says Nortel Networks President and CEO John Roth. That's why Nortel is working on ways to help call center representatives see what a customer has seen on the company's site. ▸ 58

MAKEOVER, AND OVER, AND OVER

In the first in an ongoing series, senior editor Mathew Schwartz does an in-depth analysis of a Web site redesign. He describes the three lessons Quicken-Loans.com, one of the leaders in the booming online mortgage business, has learned: Keep testing to see what works, keep tweaking to fix what doesn't and, when necessary, tell customers what they should buy.

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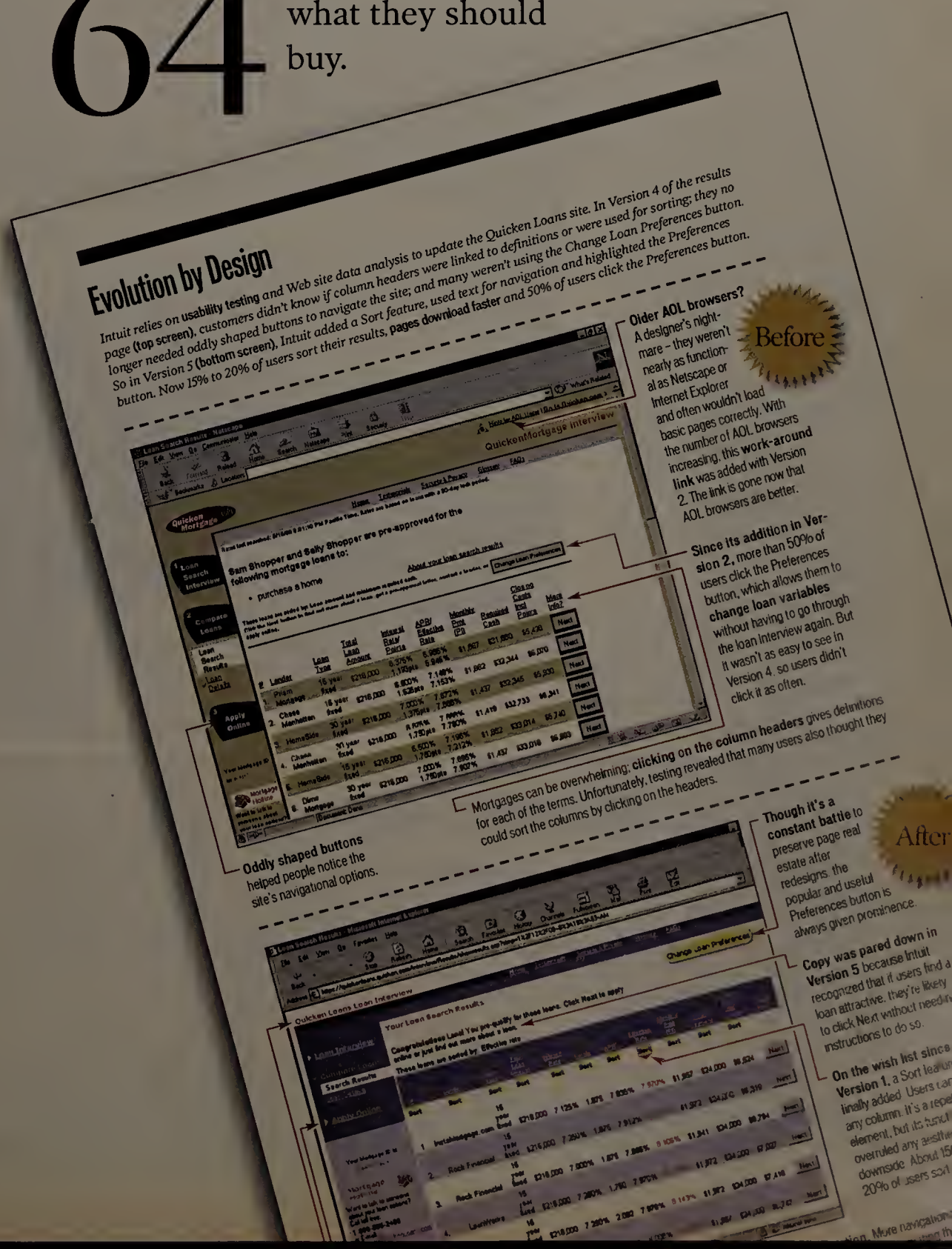

Users Hope Merger to Blend Apps, Network Monitoring

Concord, FirstSense must combine products while competing with larger vendors

BY SAMI LAIS

INFORMATION technology managers hope the total is greater than the sum of the parts in the acquisition of FirstSense Software Inc. by Concord Communications Inc.

Even before the acquisition, the vendors had partnered to ensure Concord's network-monitoring tool and FirstSense's application-performance monitor worked together.

But customers are still waiting to see if Concord can create a single, integrated product and compete against much larger vendors, such as Computer Associates International Inc., Hewlett-Packard Co. and BMC Software Inc.

At Blue Cross Blue Shield of Tennessee in Chattanooga, Hugh Hale, senior manager of information systems, recently bought 500 FirstSense licenses but has cancelled an option on another 2,500.

"I don't know where it leaves us," Hale said of the merger.

End-to-End Monitoring

Integration of the FirstSense Enterprise application performance and service-level management software into Concord's NetworkHealth suite, which has been rebranded eHealth, will support Concord's claims that it will provide end-to-end performance monitoring, said Patrick Dryden, an analyst at Giga Information Group Inc. in Dallas.

"If they put them together properly, it could be dynamite," agreed Tony Fortwengler, director of technical services at Las Vegas-based Southwest Gas Corp., a natural gas producer that uses both products stand-alone. "Plus, I wouldn't have to have two people to maintain two products; one of them could do something else."

"But, as always [with such integrations]" he added, "the key is: Can they pull it off?"

Probably, said Raymond Paquet, an analyst at Gartner Group Inc. in Stamford, Conn. "Concord was one of the first to put together server, application, end-to-end and network performance monitoring capabilities in one package," he said.

HUGH HALE at Blue Cross/Blue Shield hopes Concord Communication's purchase of FirstSense will make it easier to manage applications

Much depends on how well Concord not only integrates FirstSense but also how it correlates the data with that from the rest of the eHealth suite, Paquet said.

And to succeed, Concord "will have to compete with the Computer Associates, BMCs and [Hewlett-Packards] of the world. And they're only one-tenth the size," he said. FirstSense can only strengthen Concord, Hale said.

Unique View

FirstSense can take a business view, treating as a single transaction an activity such as filling out a form, which can entail accessing databases a dozen times. A network monitor, by contrast, sees each database access as an individual transaction.

Reports that take a business view are what his business managers want to see, said Hale, and are why he signed off on the FirstSense purchase.

"We wanted to see what the end user sees," Fortwengler said. "If someone calls in and says the fleet management program was slow this morning, this is a problem.

"But you ask the user, 'What else was going on?' and they say, 'Nothing.' FirstSense takes a snapshot of what was going on, so you can find out the user has 64MB of RAM and had four windows open," he said.

Concord will, for an unspecified time, support FirstSense Enterprise in its current version, said Brian Burba, Concord's director of product marketing. But eventually the stand-alone version will be subsumed into the new eHealth suite's ServiceHealth component, he said. Service Health, released Jan. 25, focuses on tools to help organizations meet service-level agreements.

In a letter to FirstSense customers, Concord President and CEO Jack Blaeser promised more details on the merger in a Web seminar Feb. 3.

Marlboro, Mass.-based Concord will buy FirstSense in Burlington, Mass., for $104.4 million.

Concord's annual revenue jumped from $39.5 million in 1998 to $64.8 million last year, said David Raezer, a financial analyst at Banc of America Securities in New York.

The acquisition brings to eHealth end-to-end monitoring that extends from the server through the network to the user experience at the desktop, he said. That could bring Concord's revenue this year to $106 million, he said.

Concord's eHealth Comprises:

eHealth
- The suite
- The core application containing the central console and historical and real-time analysis engine

ServiceHealth
- Includes FirstSense agent and support for Cisco Service Assurance agent
- Monitors services, such as SAP and e-mail, and issues alerts

ApplicationHealth
- Includes SystemEdge agent
- Monitors how applications use network assets to manage application servers

SystemHealth
- Central console for monitoring asset use by multiple systems for capacity planning

NetworkHealth
- Basic NetworkHealth offers monitoring for ATM, frame relay, LAN/WAN, remote access, servers and other hardware, such as routers and switches

Merger Could Affect Other Vendors

Even users of network and application-monitoring tools produced by companies other than Concord Communications Inc. and FirstSense Software Inc. could be hit by a ripple effect from Concord's acquisition of FirstSense, announced last week.

Many monitoring-software vendors "are licensing the FirstSense agent," said analyst Patrick Dryden at Giga Information Group in Dallas.

The agent resides on users' desktops and collects information on their configuration and tracks application performance. It sends that information to a console, which maintains historical data.

"It's likely that direct competitors of Concord's won't get that resource forever," he said.

DeskTalk Systems Inc., Columbia, Md.-based InfoVista Corp. and ProactiveNet Inc. in Santa Clara, Calif., are among the companies that license the FirstSense technology. Torrance, Calif.-based DeskTalk inked a deal in July to sell the FirstSense agent in its Trend ReportPack tool, which collects, summarizes and reports on application performance data provided by FirstSense.

The product has been in development, but DeskTalk will hold off the release while it reconsiders the future competitive landscape, said Debra Curtis, DeskTalk's director of product marketing.

Concord "called to say that at this time they're interested in honoring their agreements, but we'll be in direct competition with them, and we're not sure how we want to proceed," Curtis said.

DeskTalk users aren't left dataless, however. DeskTalk has a longstanding relationship with Ganymede Software Inc. in Morrisville, N.C., to provide performance data, "which is actually a bit more comprehensive technologically," she said. – *Sami Lais*

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SANergy

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Nortel CEO Says Humans Count, Even on the Internet

BY MARGRET JOHNSON

Nortel Networks Corp. is helping companies integrate customers' Web experience with the assistance they receive from call center agents, said John Roth, president and CEO of Nortel.

In the keynote address opening ComNet '00 last week, Roth said companies are looking for ways to use the Web to maintain a complete customer relationship, but because the Web won't be able to meet all needs, Nortel's unified network concept includes a continued role for call center agents.

"The successful application [of the Web] in the future is not going to be just exclusively transactional relations. People still are looking for human contact," Roth said. "Our theory is people will visit your Web site and want to talk with one of your sales reps."

The task for Nortel, which in October bought customer relationship management software provider Clarify Inc. for $2.1 billion in stock, is developing databases that let the agent rapidly retrieve data about the customer, who has learned a lot about the company on the Web site before talking with the agent.

Nortel's own experience with the unified network concept has resulted in call center agents who deal with better-informed customers and can access more information about what the customer has already viewed, Roth said.

"When the customer comes off the Web site, exhausting everything he can learn there, we want to make sure our agent knows what the customer has seen . . . so he can pick up the conversation," Roth said.

"It's important to include the human agent because people want some reassurance that there is a real person standing behind the product they are buying, and because when things go wrong, it's very difficult to get a computer to correct the problem or change course," he said.

> Our theory is people will visit your Web site and want to talk with one of your sales reps.
>
> JOHN ROTH, PRESIDENT AND CEO, NORTEL NETWORKS

Roth said Nortel's monthly revenue from electronic business was about $250 million. There are 260,000 registered users of the company's electronic-business Web site, and the site records about 13 million Web page views per month.

Roth also ran down a list of technologies — including fiber optics, Digital Subscriber Line, voice over cable, Local Multipoint Distribution Service and third-generation wireless — on which Nortel is working.

He also said there is much on the horizon involving wireless Internet services, applications and devices, particularly among companies preparing to roll out 56K bit/sec. transmission capacity to a range of data devices later this year.

"The industry is putting a toe in the water to see what consumers are going to do," Roth said. "This is going to be one of the highest-growth industries." ◗

Johnson writes for the IDG News Service in Washington.

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Veritas Promises Linux Clustering

Questions remain about acceptance of the product

BY DOMINIQUE DECKMYN

Storage management vendor Veritas Software Corp. in Mountain View, Calif., has announced plans to launch Linux versions of all its key products, including its Cluster Server fail-over software.

Cluster Server will be demonstrated at the LinuxWorld show in New York, which opens Wednesday. Other products that will be ported to Linux include the company's NetBackup enterprise backup software and its journaling file system. All products are scheduled to ship in the second half of this year.

"As [Linux] goes further into the enterprise and into e-business, these sorts of tools will be needed," said Stacey Quandt, an analyst at Giga Information Group Inc. in Cambridge, Mass. But the clustering software will require modifications to the operating system kernel, she said. "The question is: How is this going to be accepted by the open-source community?" said Quandt.

TurboLinux Inc. in Brisbane, Calif., already markets a Linux clustering product called TurboCluster. It faces the same challenge, Quandt said. But Veritas' recently announced relationships with Oracle Corp. and especially Red Hat Inc. may help. "Red Hat employs some of the key [Linux] kernel developers, so they have something of an advantage over TurboLinux," said Quandt.

Veritas product manager Marty Ward said his company's tools will work without modifications to the Linux kernel, though not as quickly.

Pricing for the Linux software wasn't disclosed. ◗

Moving to Web Applications? Don't Forget Bandwidth

BY CRAIG STEDMAN

Before Millipore Corp. began an upgrade of its ERP system, the maker of purification devices had a lot of plumbing work to take care of.

Network plumbing, that is.

Millipore, based in Bedford, Mass., last month completed an overhaul of its network infrastructure in preparation for a planned switch later this year to Oracle Corp.'s new Web-based enterprise resource planning (ERP) applications.

The $700 million manufacturer is one of the many users that still run Oracle's green-screen, terminal-based ERP software. But new releases of the applications support the Web-based format only with a graphical user interface, which means all of Oracle's users will eventually have to do the kind of migration that Millipore is making.

Millipore also plans to centralize its ERP system on a global server that can be accessed from anywhere in the world. But first the performance of its WAN and the LANs used at headquarters and remote offices had to be cranked up.

That's a key piece of the company's strategy for keeping end-user response times from ballooning after the changes are made to the ERP system, said Michael Dapcic, manufacturing business systems manager at Millipore.

With the green-screen applications, users typically get information they're looking for in less than two seconds. "They hit that button, and the screen flashes right back at them," Dapcic said.

To try to keep performance in that range using the Web-enabled, graphical version of the applications, Millipore installed a new Gigabit Ethernet backbone network based on switches from 3Com Corp. at its headquarters. Remote offices were outfitted with Fast Ethernet LANs, also built around 3Com switches, and WAN bandwidth to many of the offices was doubled or even tripled.

"This is all to get ready for the fused environment" with the centralized server and Web-based applications, said Ram Prabhu, Millipore's corporate telecommunications manager. Neither he nor Dapcic would say how much the network upgrade cost.

Even with the power boost over Millipore's old 10M bit/sec. LANs, though, more testing is still needed to make sure everything will work smoothly when Oracle's graphical user interface goes into widespread use.

For example, Dapcic said it took 15 to 20 seconds to process purchasing transactions during tests of a Windows-based version of the graphical user interface that's being given to some of Millipore's users as an interim step.

The project team is still looking for the cause of that slowdown. "We're kind of feeling our way in the dark ourselves in some cases," Dapcic said.

Byron Miller, an analyst at Giga Information Group Inc. in Cambridge, Mass., said Oracle's use of Java in its Web-based client software means network speeds "have to be pretty good if you're going to [run] it over a WAN" because of the time needed to download Java applets over the network.

Global View

How Millipore's new corporate network is set up:

- A Gigabit Ethernet backbone network based on an array of 3Com switches is in place at company headquarters.
- A pair of Sequent Unix servers that run most of Oracle's ERP suite connect to the network via redundant 100M bit/sec. Ethernet links.
- Desktop PCs at headquarters are tied to the network via switched 10/100M bit/sec. Ethernet connections.
- More than 30 offices are connected to the Bedford backbone via a WAN built around Cisco routers.
- Remote offices have 3Com-based Fast Ethernet LANs that provide switched 10/100M bit/sec. Ethernet connections to desktop PCs.

BRIEFS

Networking Pact

Viatel Inc., a telecommunications company in New York, and Intira Corp., a privately held technology consulting firm in Pleasanton, Calif., have signed a deal for a 10-year alliance. Viatel's contribution will include high-speed telecommunications services, while Intira will bring networking infrastructures and consulting services to the deal. Financial terms weren't disclosed.

Personalized Online Ads

Mountain View, Calif.-based MarketFirst Software Inc. has rolled out its Online Media Response Blueprint, an application that personalizes online advertisements and other campaigns. Customers can click on a banner ad or another media placement, fill out a brief form and receive future offers and ads tailored to their interests. Pricing for the application begins at $75,000.
www.marketfirst.com

Online Entertainment Tools

Sun Microsystems Inc. and Oracle Corp., along with business consultant company PricewaterhouseCoopers in New York, have announced a joint deal to provide technology, tools and services, such as digital conversion, support for electronic-business applications and archiving and retrieval of content, to media and entertainment companies. Financial terms of the agreement weren't disclosed.

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Linking Your Thinking

A software brain that personalizes your PC so it's organized the way you think. By Russell Kay

ABOUT TWO YEARS ago, I was introduced to a fascinating and, frankly, offbeat piece of software called The Brain, from The Brain LLC (formerly Natrificial Software Technologies Inc.) in Santa Monica, Calif. I used the product for a while and then stopped. Recently, I caught up with the product again, and it's just as intriguing now as it was then.

You may have noticed that I haven't yet said what The Brain is or what it does. That's because there isn't any convenient label I can tack on to it.

The Brain (currently at Version 1.73) is a tool for managing information by visually organizing resources on the computer or Internet according to whatever scheme makes sense to you, completely independent of the file system. (To better understand my description, see the graphic below.)

The terminology is a little strange. The Brain uses a 3-D network to link what it calls "thoughts" — graphic objects that can be anything from a label or Web address to a directory or document, or even a server or outside network. These thoughts are displayed on a field called the Plex.

At the center of the screen display is what's called the "active thought," together with the parent, child and sibling thoughts that are linked to it. Click on any nonactive thought and it gets rotated into the center. Not all thoughts are visible at one time — just the active thought and those other thoughts that are directly linked to it. Double-click on the active thought and it opens whatever you have associated with it, such as a document or application.

After using The Brain again, I've come to appreciate how this type of tool makes me think about how I think. As a computer user since before the term *PC* was coined, I've gotten pretty settled into dealing with hierarchical file- and directory-oriented tools such as Windows Explorer.

That's a comfortable system, but it's certainly true that I often have to think about where I put a particular file, or I have to actually do a search to find that file. So that's a price I pay for adopting the organization that fits the hardware and software better than it fits me.

But with The Brain, I can set up logical links from any project to any file or document. I can set up my work based on projects, timetables, geography or any combination of those and other organizing principles that make sense to me. Just using The Brain makes me think a little harder about how I organize things in my head.

To give you an example of this flexibility, consider the Brain view in Figure 1: Here, the active thought is my index of work in progress for future issues of *Computerworld*. As I hover the cursor over one section, the links to it are highlighted in yellow to make them more visible. The exact same Brain is shown in Figure 2, except that I'm highlighting some of my personal interests.

Using The Brain takes quite a bit of getting used to. It's not hard, but it's so different that I feel a strong push to go back to my old ways, where I don't have to think quite so much about what I'm doing. But that's really just a learning-curve issue. The imperative isn't to learn the system but to change habits of thought.

The Brain was conceived in 1993 by Harlan Hugh, a young information technologist who felt the need to focus on the connections between information instead of the separations. He wanted to concentrate on the information itself, not on how it's handled under the hood of the computer. That's why representations in The Brain are based on content, not on format or physical location, and direct links are clearly shown. Hugh, now president of the company, has six patents pending on his Brain technology.

Although not too much publicity has been given to The Brain, it has attracted an impressive group of investors, including Randall Kaplan, one of the co-founders of Akamai Technologies Inc.; EarthLink Network Inc. founder Sky Dayton; and industry pundit Esther Dyson of EDventure Holdings Inc.

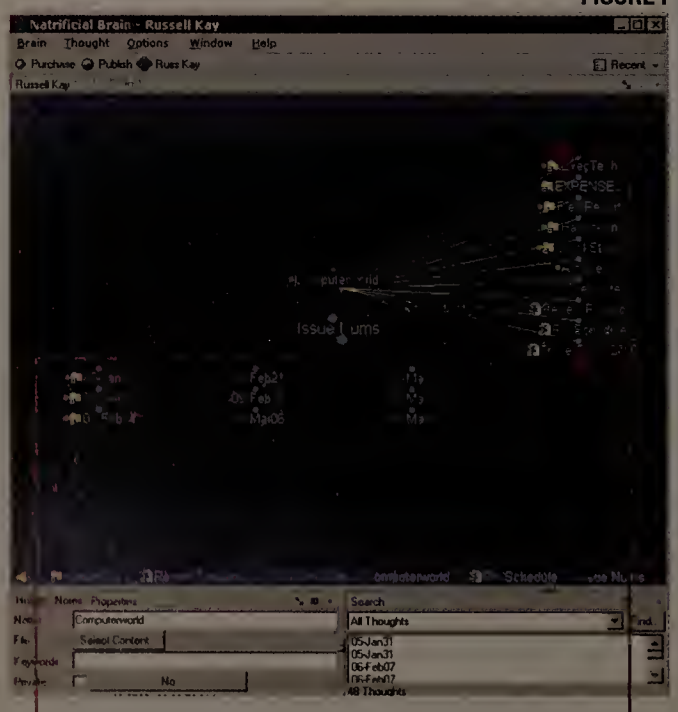
There are three products available: The Personal Brain (a 30-day trial version is downloadable from *www.thebrain.com*), a version designed to simplify navigation on Web sites (see Figure 3, a Web site at Columbia University) and a development kit that can be used to embed Brain technology in other applications.

The Brain also offers the ability to publish a Brain to a server on the company's Web site to make your Brain accessible to others. Any thoughts you don't want made public can be tagged as private and won't be copied. ◗

FEATURED PRODUCT
The Brain
The Brain LLC
Santa Monica, Calif.
(310) 656-8484
www.thebrain.com

THE BRAIN AT A GLANCE

FIGURE 1



Links between thoughts are indicated in light blue. Hover the cursor over a thought and its links are highlighted in yellow. The three thoughts at the bottom right are all spreadsheets, as indicated by the Microsoft Excel icon.

FIGURE 3

FIGURE 2

This Brain is a site map to Columbia University's graduate architecture program. As you click on a thought, the brain rearranges and shows a new page.

Note that this is the same Brain shown at left but with a different node as the active thought. Hover your cursor over a single link and it turns red, giving you the option to unlink. The folder icon indicates that this thought is a directory.

Each thought in a Brain has three circles attached to it. The top circle links to its parent and the bottom circle to child thoughts. The one at left indicates that there is a "jump" link to one or more additional thoughts located elsewhere in the Plex. A green circle means there are linked thoughts, and an unfilled circle indicates no linked thoughts at that point.

Web Hosting

BY JAMES COPE

DEFINITION

Web hosting involves providing, maintaining and managing hardware, applications, content integrity, security and the high-speed Internet connection for a Web site.

AT ITS MOST basic level, a Web host is either a company that provides Web space for other firms or an organization that hosts its own site. It stores content on server hard drives and makes that content available to users over the Internet.

Users get to the content by entering a Web address, which instructs the underlying protocols of the Internet to find and fetch the home page. Hypertext links on the home page give the visitor passage to other pages within the same site or to other sites.

The two major elements in Web hosting are the network infrastructure and the applications used to operate the Web site, says Joel Yaffe, an analyst at Giga Information Group Inc. in Cambridge, Mass. Physical facilities, site management and security are also important factors, according to large hosting companies such as Digex Inc. in Beltsville, Md., and Exodus Communications Inc. in Santa Clara, Calif.

Basic Infrastructure

The core elements of a Web-hosting center include the server hardware, operating system and Web-server application.

Unix has been the preferred operating platform, but Windows NT is becoming increasingly popular, according to Yaffe. The Web sites for New York-based Barnesandnoble.com LLC and Round Rock, Texas-based Dell Computer Corp., which are both e-commerce operations, run on Windows NT. Exodus and others offer both Unix and Windows NT-based server setups.

According to experts, Unix has generally been considered more secure and reliable, but trust in Windows NT as a Web-sever platform has grown stronger during the past couple of years.

A network firewall — sometimes a PC running special firewall software, other times a special integrated hardware and software device — stands between the Web server and the Internet. Although a firewall permits normal traffic between the outside world and the Web server, it doesn't allow unauthorized users outside the firewall to access the content of the Web site.

Without a firewall, an intruder could rework content, steal data or even take up residence and establish a private site on the Web server.

Typically, a Web-hosting center will connect to the Internet via one or more high-speed phone lines, such as a DS3 line that accommodates data transfer rates of up to 45M bit/sec.

Applications

The Web server is just one application. Although it can maintain and serve up Web pages and limited amounts of data, it isn't built for handling data-intensive sites such as those with online catalogs containing thousands of model numbers, prices and photos. The same is true for conducting e-commerce or providing interactive chat or streaming audio and video.

In those situations, task-specific applications are required; they generally run on separate computers that are interconnected with the Web servers. The server passes the instructions from the user to the appropriate application. For example, when a user requests the price of a product, the Web server takes the price that's extracted from the database and presents it as a component on the Web page.

Downtime isn't an option, especially for those who sell over the Web, according to Exodus. Most organizations need their Web sites up and running around the clock. That level of reliability calls for redundancy — Web and application servers that instantly take over should the primary ones fail. It also requires regular backups to ensure data integrity, battery-based uninterruptible power supplies that seamlessly compensate for power grid deviations or brief outages and on-site generators that automatically kick in during a sustained power outage.

But everything going full bore doesn't necessarily mean the Web site will quickly appear when a user enters the site address. When thousands of users simultaneously try to access the same site, it's not unusual for traffic to exceed the capabilities of the servers or the capacity of data lines connecting the servers to the Internet.

When this happens, users get stuck in a virtual queue, waiting for their browsers to download a Web page.

Managing the Site

According to Digex, many large companies outsource their Web sites to hosting companies because those companies offer management services, taking care of security, updating software and providing site-monitoring services.

However, as Web-based applications become increasingly important to a company's business, Yaffe says he expects more large organizations to do their own hosting.

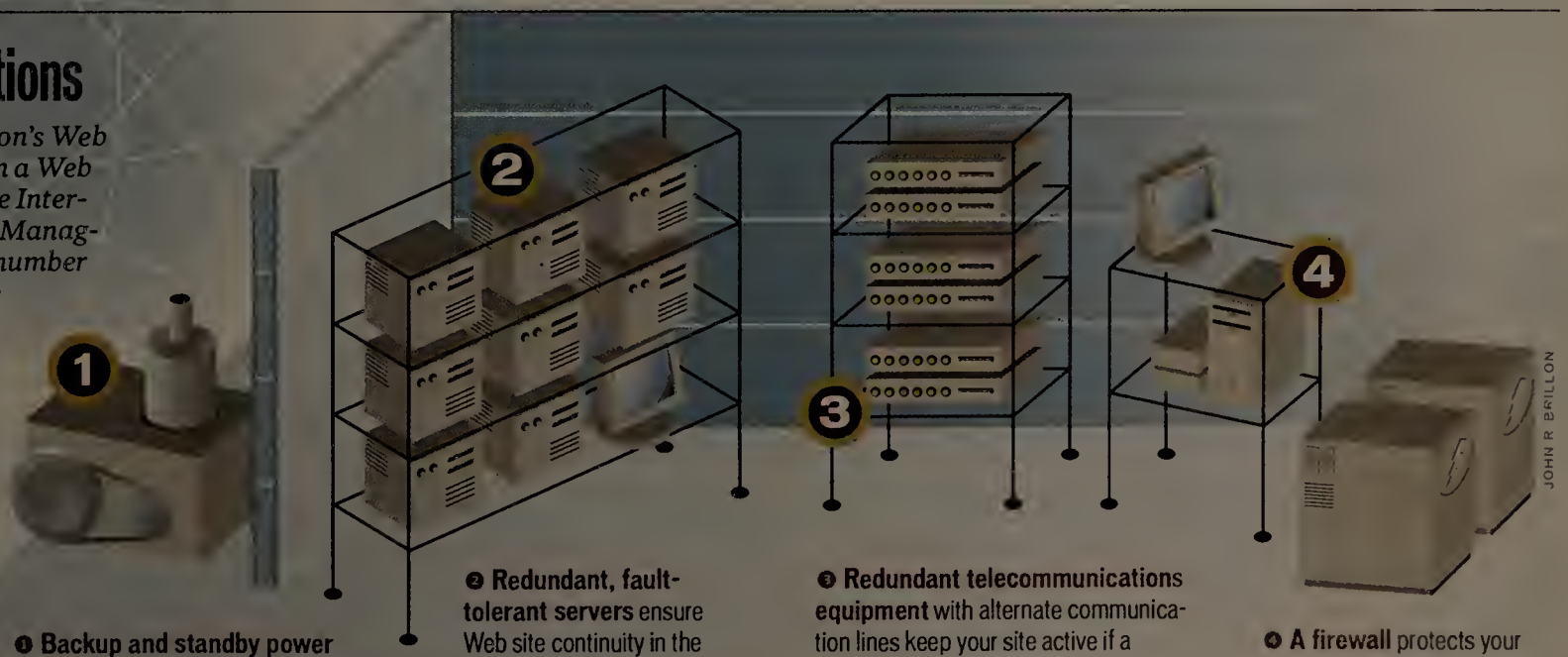
Online Resources

- Tutorials on how the Web works. *www.webproforum.com*
- Detailed information about networking and the Internet. *www.pugettech.com*
- An index and rankings of Web-hosting companies. *www.hostindex.com*
- Information on site security. *www.icsa.net*
- All about standards for the Web. *www.w3.org*

Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.

Web Hosting Considerations

For others to access your organization's Web site at any time, it has to be stored on a Web server that's always connected to the Internet, preferably by a high-speed link. Managing that server, however, involves a number of considerations and an impressive amount of planning and work, so many organizations will want to outsource that to a Web-hosting company. The following are some of the factors that a Web host must take into account:



JOHN R BRILLON

❶ **Backup and standby power** is needed to keep the site going in the event of a loss of electrical power.

❷ **Redundant, fault-tolerant servers** ensure Web site continuity in the event of the failure of a server box or a hard drive.

❸ **Redundant telecommunications equipment** with alternate communication lines keep your site active if a phone line or router goes down anywhere in the chain.

❹ **A firewall** protects your site from malicious hacking and unauthorized access.

R&D GEMS

Companies are already lining up to adopt some of the coolest technologies from university research labs. Get ready for a "worldwide virtual computer," infinitely scalable databases and "nomadic data access." By Gary H. Anthes

YOU CAN ALMOST HEAR THE paradigms shifting way up in those ivory towers. At the University of Virginia, they're inventing a "worldwide virtual computer." At the University of California, it's a "planet-scale, self-organizing" system. And at Carnegie Mellon University, they call it an "invisible halo of computing."

While researchers at each of these universities are pursuing their visions in very different ways, at a fundamental level, they all are dreaming the same dream for the 21st century. They say that computers will disappear yet be everywhere, that virtually every person and thing will have digital connections to every other person and thing and that the pain and risks of computer use will greatly diminish. They say the impact on computer managers and users will be profound.

The vision stretches far into the future by information technology standards — 10 years at the University of California at Berkeley — but some capabilities are scheduled for prototyping in the next year or so. And the University of Virginia has already found real-world users for Legion, its virtual computer.

"This research is moving us in the right direction," says Leonard Kleinrock, a computer scientist at the University of California at Los Angeles (UCLA) and one of the fathers of the Internet. "We are going to have distributed intelligence, distributed knowledge. Internet services will be everywhere, always available, always on, but most of all, invisible, just like electricity is."

Legion: A Worldwide Virtual Computer

University of Virginia

"We need vast amounts of computer power, and there are problems we won't even touch unless we know the computer power is there," says Michael Crowley, a scientist at The Scripps Research Institute in La Jolla, Calif. For example, a job that models protein-folding can run for 12 hours on a supercomputer, so Scripps asks Legion to roam the country sniffing out spare computer cycles.

"We just say, 'Legion, run it,' and it finds machines that are open, finds the correct executable, gets all the input files over there, runs the job and brings the output back," Crowley says.

Legion (*http://legion.virginia.edu*) is a highly flexible, wide-area operating system designed to build a virtual computer from millions of distributed hosts and trillions of objects — while presenting the image of a single computer to the user.

Originally developed for U.S. government scientists, it is now finding use in private labs and will eventually move to mainstream commercial use, says Legion architect Andrew Grimshaw, director of the Institute for Parallel Computation at the University of Virginia in Charlottesville.

Legion applies many of the object-based interoperability principles in the Common Object Request Broker Architecture. It finds and schedules resources and handles security issues among disparate operating systems and objects written in different languages. That frees users from the need to negotiate with outside systems and administrators.

Grimshaw says Legion is more robust than today's commercial systems because it's based on a "good, clean conceptual model" that considered basic services such as security from the outset, not as an afterthought.

"The concept of Legion is something I've been calling for for years," says Kenneth Neves, director of computer science research at The Boeing Co. in Seattle, which is evaluating Legion. "If you're a company like Boeing and you're going to invest millions of dol-

lars to develop something like a new fluid dynamics program, you'd like to have some consistency in the model of the program, and we are not getting that from the individual vendors."

Legion gets its consistency from interoperability standards that mask the incompatibilities among lower-level components.

Neves says Legion possibly could run Boeing's highly complex and distributed product data management and manufacturing resource control systems. "The technology came out of the scientific computing world, but it will probably have its greatest impact in other areas," he says.

For example, Neves says, Legion could prove ideal for the large, distributed transaction processing applications employed by big financial institutions. "With its virtual file system, one could write unlimited-size database applications."

Endeavour: A True Information Utility

University of California at Berkeley

In its Endeavour project, the University of California at Berkeley (UC Berkeley) has a vision that's broader than Legion's, but the projects share some goals — principally that computing resources ought to be invisible, easily managed and invoked, and infinitely scalable.

Endeavour (*http://endeavour.cs.berkeley.edu*) envisions an "information utility" that adapts on the fly to the supply and demand for computing resources anywhere in the world. "Fluid software" will choose where to execute and where to access storage. It will requisition resources as needed and negotiate agreements to ensure "always-available" processing.

Endeavour is really a collection of projects. One, called OceanStore, will provide "nomadic data access" — serverless, homeless and freely flowing through the network — that will make the storage available to a user essentially infinite.

For a small fee, users will subscribe to a storage utility that will let them store data "in the net." The utility will be provided by multiple, independent service providers, which will be responsible for providing backup, encryption and disaster recovery.

That will lead many companies to outsource data storage, says OceanStore project manager John Kubiatowicz. "You'll have the ability to travel anywhere in the world, and your stuff is just there," he says. The first prototype is due to be unveiled next year, he says.

A second Endeavour project is inventing microelectro-mechanical systems (MEMS), tiny devices that can combine sensors, communications devices, processors and power supplies into packages the size of this letter o. MEMS could revolutionize supply-chain management, for example. An item such as a refrigerator with an embedded MEMS device could generate a lifetime stream of information, transmitted to the manufacturer or owner. With a MEMS chip inserted early in the manufacturing process, the refrigerator could direct its own factory routing, machine controls, warehousing and maintenance.

In another Endeavour activity, researchers are learning how to capture an organization's tacit, or implicit, knowledge. "We are at the point now where we can embed intelligence in our systems so they can observe how they are being used and adapt themselves to that use," says Randy Katz, Endeavour project leader. For example, an application might infer and report indirect relationships among people because they behave similarly. The application might say, "Your team seems to be organized like this other team, and you are creating documents with similar sounding names. Do you know that this other team exists?"

GARY LAUFMAN

UC BERKELEY RESEARCHERS Randy Katz (left) and John Kubiatowicz are developing a data storage utility that has essentially infinite capacity

> We are at the point now where we can embed intelligence in our systems so they can observe how they are being used and adapt themselves to that use.
>
> RANDY KATZ, ENDEAVOUR PROJECT LEADER, UNIVERSITY OF CALIFORNIA AT BERKELEY

UC Berkeley is working with IBM to put these kinds of capabilities into Lotus Notes, Katz says.

UCLA's Kleinrock agrees that such capabilities are coming but says they raise privacy concerns, because people say they "don't want to be tracked all the time."

Aura: An Invisible Halo of Computing

Carnegie Mellon University

Carnegie Mellon University's Aura project (*www.cs.cmu.edu/~aura*) has many of the same goals as Endeavour, but it focuses especially on the human-computer interface. Its developers say the most precious resource in a computer system is no longer processor speed, memory, disk storage or bandwidth — it's user attention. Systems today constantly distract users, making them less effective.

"Computers are consuming much more of our time than in the past, especially as we move to heterogeneous systems and networks," says Daniel Siewiorek, director of the Human-Computer Interaction Institute at Carnegie Mellon in Pittsburgh. "The distractions are due to incompatibilities in data representations, applications and platforms."

Aura's goal is to give users an "invisible halo of computing" that persists regardless of location. "Systems should adjust to the context you are in," Siewiorek says. For example, a budget spreadsheet might display individuals' salaries in the privacy of a user's office but automatically suppress them when the spreadsheet is displayed on an airplane.

The halo will make for "smart offices," Siewiorek says. "As you enter the room, your [body-worn computer] interacts with the room's aura, and it knows who you are and your preferences. So I walk into a colleague's office to show him a slide presentation, and by the time I walk in, I should not only be authenticated, but the presentation I had open on my desk should be open on the computer there. And if I'm a Mac user coming into a PC office, that system should know that and do what needs to be done."

The idea is to allow users to just specify tasks — "make a budget," for example — rather than the underlying application programs, files and information formats.

Kleinrock says Aura gets at the problem of "feature shock," which overwhelms end users. He says much work has been done to develop application programming interfaces at the IP layer. "Now, there's another place to focus — at the top, at the interface with the user. We need a more common API to the human."

TWEAK THIS!

WEB SITE MAKEOVERS
AN ONGOING SERIES

After three years in operation, leading e-mortgage site QuickenLoans.com learned three things: Test ruthlessly, tweak constantly and tell customers what they need. By Mathew Schwartz

ONE YELLOW BOX. A measly 150 by 72 pixels on the QuickenLoans.com home page. Fifteen minutes of coding on a Tuesday afternoon. Yet it boosted Quicken Loans Inc.'s user return rates from 2% to 11%. Talk about an inexpensive way to recapture customer loyalty.

That's the power of proper Web design. The problem isn't so much the coding, but knowing what to code. And that's where Web redesign plans like those of QuickenLoans.com come in.

Creating a good design is a challenge all e-commerce sites face, because a poor design can frustrate customers and have a financial impact. As studies from Redwood City, Calif.-based Zona Research Inc. have shown, more than one-third of online shoppers who have trouble finding a product just give up altogether. And really dissatisfied customers don't just stay away; they discourage their friends from visiting, too.

QuickenLoans.com, a leader in the booming online mortgage business, has been through the Web site redesign trenches and has deduced three key lessons: keep testing to see what works and what's wrong, keep tweaking to fix what's wrong and, when necessary, tell customers what they should buy instead of giving them too many choices.

LESSON 1: Test, Test, Test

A loan rate sheet that lists every possible fee associated with a loan. Definitions of mortgage terminology used on the site. Replacing navigation buttons with plain-text links. All of these Quicken Loans features came from one source: user testing.

But for Quicken Loans, which is owned by Intuit Inc. in Mountain View, Calif., testing the site to see how usable it is doesn't mean just analyzing site logs — the records of how many hits each page got, which paths users took through the site and how many people made it to the checkout but then didn't buy anything. While you might think it's reasonable to trust such data, experts caution that it can deceive (see "When Numbers Lie," page 66). You have to go beyond simple log analysis and test your site on people.

A case in point is a study of The Walt Disney Co.'s Web site by User Interface Engineering (UIE), a North Andover, Mass., firm that tests the usability of Web sites and publishes annual usability benchmarks. Even after three redesigns of Disney's Web site, none of the 80 testers in a UIE test could find the cheapest hotel along the Disney World monorail using the site. That's something

that could be done in 10 minutes by calling a customer service person.

But there was another problem, says UIE's founding principal, Jared Spool. "When we do the test, one out of five users ends up finding a hotel in Disneyland instead of Disney World. *Land, world*, what's the difference? A few thousand miles," he quips. UIE even double-checked with users to make sure they understood the task, but users still blundered into the same problem.

"If we let them, they would actually book a hotel room in Anaheim, then fly to Orlando and wonder why they didn't have a room. This has got to be a serious problem for Disney," says Spool. Such is the fallibility of Web data, he says. "How do you know when someone is lost on your site? The logs won't tell you."

Convinced? Intuit is. In addition to analyzing Quicken Loans site logs, the company performs user testing, holds roundtables with consumers and conducts competitive usability testing. Marie Tahir, the human factors project manager at Intuit, also began to have couples, not just individual users, take part in usability studies to better mimic the site's real-world users.

"Mortgages aren't just about going through software," she says. "It's so personal. Getting to hear couples talk through software and personal decisions they're making about loans and personal finances — 'We should really pay off our credit cards' — really cements them in the designers' and engineers' minds."

Tahir says such knowledge pays off when her designers, who keep refining the site's feature set and interface, or engineers, who translate those changes into code, refer to specific users when discussing design issues.

Intuit also tests the Quicken site against its offline mortgage competition. In one series of tests, Intuit listened to how people interacted with mortgage brokers. Besides reaffirming that the mortgage process is a daunting one for most people, Tahir says those tests showed that users didn't get all the information they needed if they didn't ask the right questions. One way for Quicken to compete, then, was just to turn the tables for consumers — educate them about mortgages and make applying for one simpler. So Quicken links every mortgage term on the site to its definition and lets consumers opt out of the online interview and call a toll-free number at any time.

Another aspect of educating consumers involves giving them complete financial information. Studying newspapers in comparison tests, Intuit saw that many loan advertisements didn't document required fees. So on the Quicken loan results page, if consumers click the Next button to see more information about a loan, they get a printer-friendly page that lists all additional fees. "It errs on the side of being complete, [listing] the maximum you can imagine paying," says Tahir. Intuit also added two columns to the page, so consumers can use the printout to comparison shop.

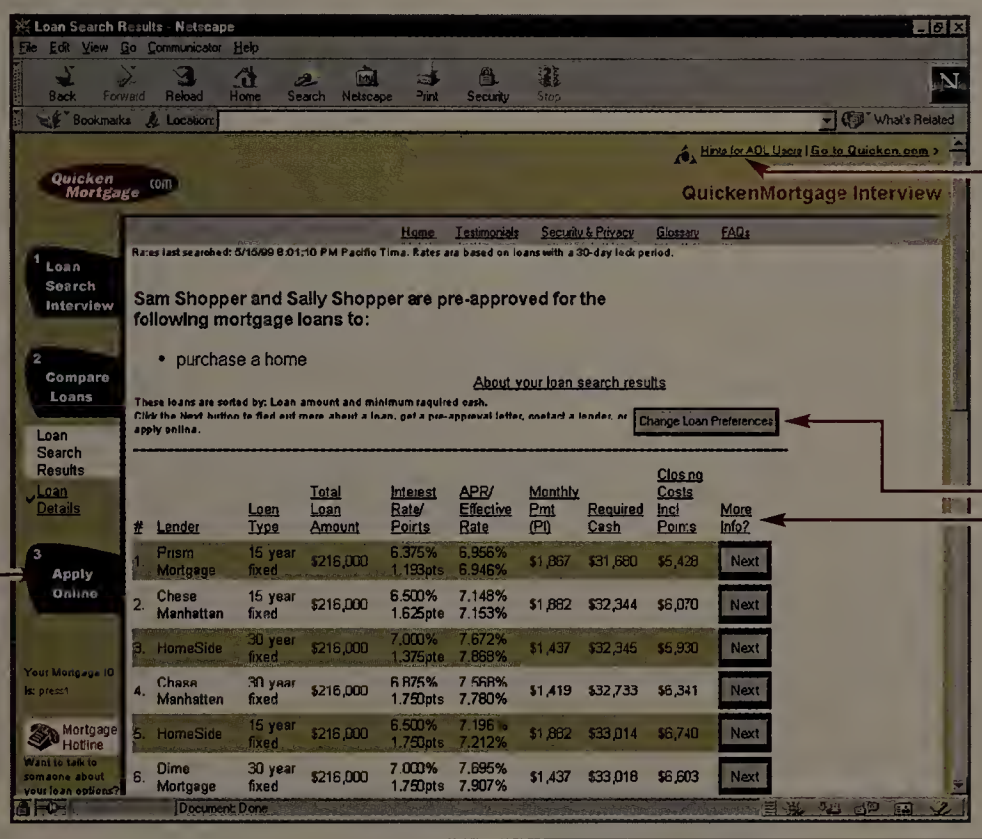
Lesson 2: Create a Tweak Team

For the first few months, Intuit programmers worked well into the night doing daily design tweaks. Once the site was live, management decided to upgrade it every six months, and much energy went into planning each new version. But by the third version, day-to-day details that needed tending to were being neglected.

Tweak This!, page 66

Evolution by Design

Intuit relies on **usability testing** *and Web site data analysis to update the Quicken Loans site. In Version 4 of the results page* **(top screen)**, *customers didn't know if column headers were linked to definitions or were used for sorting; they no longer needed oddly shaped buttons to navigate the site; and many weren't using the Change Loan Preferences button. So in Version 5* **(bottom screen)**, *Intuit added a Sort feature, used text for navigation and highlighted the Preferences button. Now 15% to 20% of users sort their results,* **pages download faster** *and 50% of users click the Preferences button.*



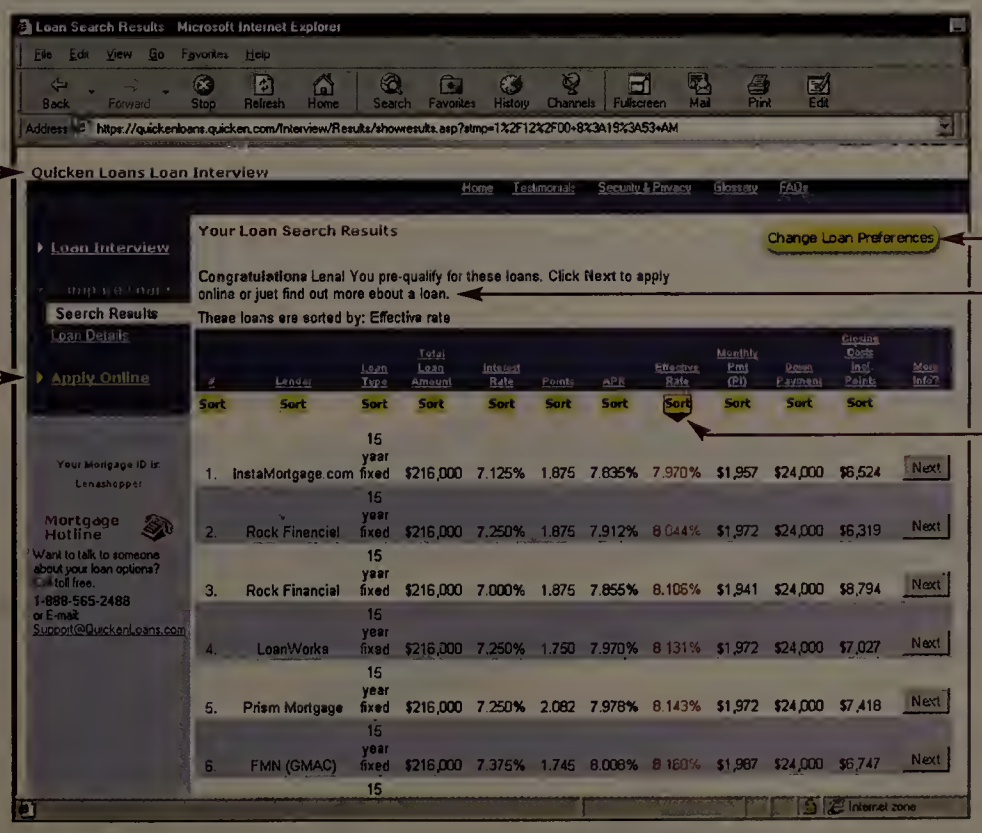
Older AOL browsers? A designer's nightmare – they weren't nearly as functional as Netscape or Internet Explorer and often wouldn't load basic pages correctly. With the number of AOL browsers increasing, this **work-around link** was added with Version 2. The link is gone now that AOL browsers are better.

Before

Since its addition in Version 2, more than 50% of users click the Preferences button, which allows them to **change loan variables** without having to go through the loan interview again. But it wasn't as easy to see in Version 4, so users didn't click it as often.

Oddly shaped buttons helped people notice the site's navigational options.

Mortgages can be overwhelming; **clicking on the column headers** gives definitions for each of the terms. Unfortunately, testing revealed that many users also thought they could sort the columns by clicking on the headers.



Though it's a constant battle to preserve page real estate after redesigns, the popular and useful Preferences button is always given prominence.

After

Copy was pared down in Version 5 because Intuit recognized that if users find a loan attractive, they're likely to click Next without needing instructions to do so.

On the wish list since Version 1, a Sort feature was finally added. Users can sort any column. It's a repetitive element, but its functionality overruled any aesthetic downside. About 15% to 20% of users sort.

Since Version 4, users have become more comfortable with plain links for site navigation. More navigational clues are also built into the pages to lead users through, making the oddly shaped buttons less relevant. Furthermore, eliminating the graphical buttons pays off in faster page downloads.

The site was rechristened Quicken Loans from QuickenMortgage.com because the business expanded beyond mortgages.

TWEAK THIS!

Continued from page 65

To deal with day-to-day troubleshooting between major upgrades, Intuit created a Tweak Team and, even more important, budgeted time for tweaking into the production process.

For instance, after the production team went live with Version 4, the Tweak Team came in and had nine weeks to make tweaks to Version 4's live site.

Major upgrades favor stability over experimentation, so the tweaking process is an opportunity to rapidly prototype a concept, such as Quicken's one-loan result page. (See Lesson 3.) The Tweak Team tries things out, writing the necessary code and changing site content.

Sometimes, team members just hedge their bets, add a feature to the live site and then test it. If the concept doesn't work, it's deleted, which ultimately saves development time. If it does work, then it gets fully designed for the next major release.

"That's the benefit of the Web — being able to put that out live and seeing that the concept was going to work. It helped focus the design time most effectively," says Tahir, referring to the development of the one-loan result page.

Intuit handles testing using the Brio.Enterprise 6.0 suite of tools from Brio Technology Inc. Tahir says Intuit liked Brio's menu-driven interfaces and scriptable queries. Intuit engineers can pre-script most of the queries that the Tweak Team, marketing or other groups will need to collect site data, so the engineers' presence isn't required to use the product.

Some site tweaks may seem mundane, but they can generate noticeable improvements.

The Change User Preferences button on the Quicken Loans loan-results page, for example, lets users change their loan preferences by adjusting rates vs. points, amount of down payment and type of loan. It's a real time-saver: Without it, users have to look back through their interview, wasting time. So why weren't users clicking on the once-popular feature as often as they once did?

The answer: There were so many other elements on the page, people couldn't see the button anymore. "As a page changes, more functionality gets added, and you have to play around with placement on the page," Tahir explained. The Tweak Team moved the button to the upper right-hand corner of the page, and the impact was immediate. More than 50% of Quicken Loans customers now use the button.

Lesson 3: Tell Customers What They Need

In countless usability tests, users flat out said they just wanted to see every loan they qualified for at once and make their own choices. But Intuit takes such requests with a grain of salt, balancing them with its own observations about people's behavior — what their higher goals are and how they use the software or browse the site. "If you ask questions, you don't always get accurate answers; you get answers of what people think they would like," says Tahir.

MARIE TAHIR: Intuit found that making a recommendation can help close a sale

For instance, mortgage shoppers value good advice.

"We knew from the [user testing] lab that one thing mortgage brokers do is hold hands and make the process easier, especially for first-time buyers. Generally, brokers will make a recommendation," says Tahir.

Furthermore, research has shown that the faster users find what they're looking for, the more satisfied they are with a site.

The Tweak Team tested a hunch and created a one-loan result page that told users which loan best fit their needs. On the new one-loan result page, consumers could accept the loan or click to see all of the 20-or-so loans for which they qualified.

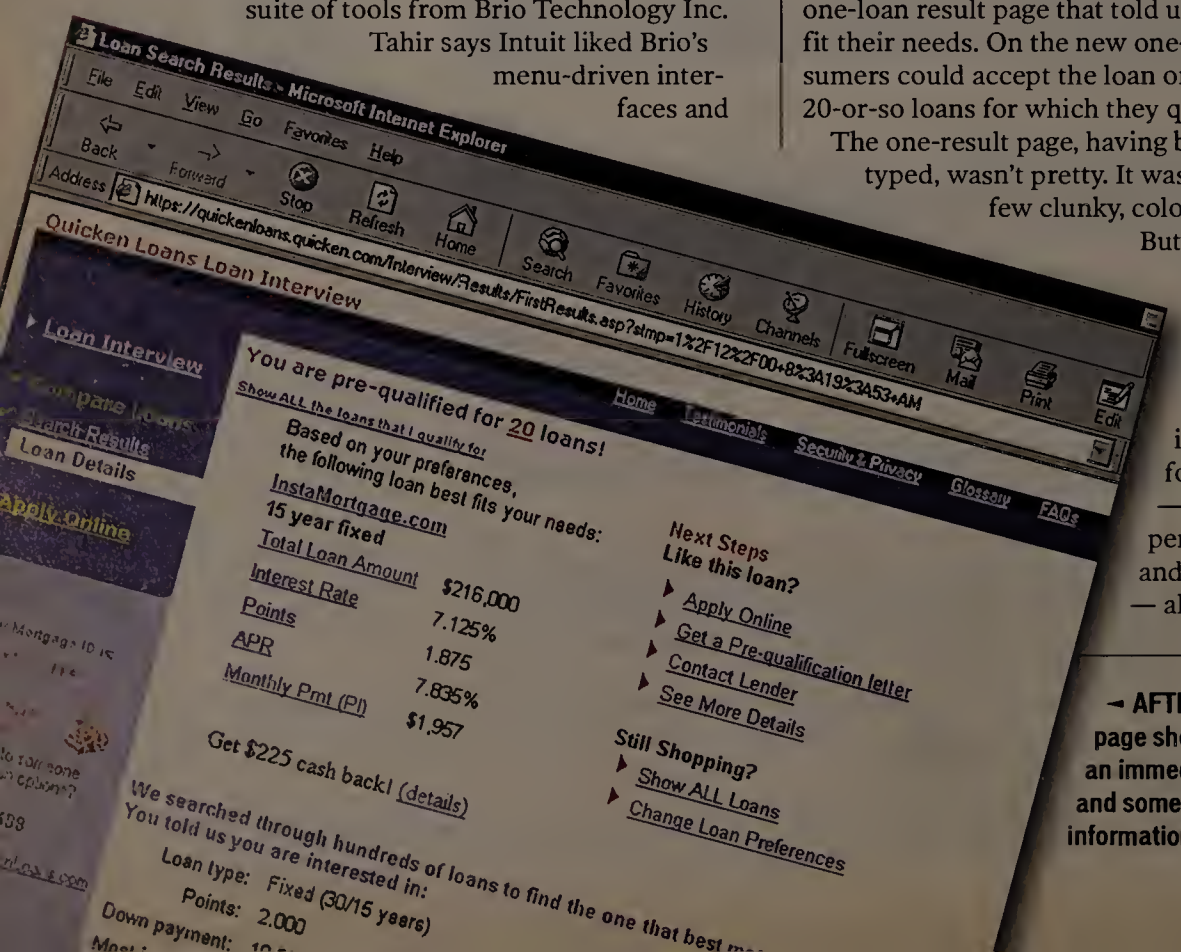
The one-result page, having been rapidly prototyped, wasn't pretty. It was just some text and a few clunky, colorless buttons.

But users took the bait. Almost immediately, the loan capture rate — Quicken Loans' chief source of revenue because it's paid a commission for every loan captured — jumped 15% to 20% per month on average, and sometimes even 30% — all because of a few days of design and coding.

For whatever reason, users felt more comfortable accepting a page that read, "Based on your preferences, the following one loan best fits your needs."

The moral?

Users think they know what they want, but sometimes it's up to you to look at a group of them, gather data and tell them what they really need. ◗



➡ AFTER VERSION 4, Intuit added a page before the "all loans you qualify for" page. The new page showed the one loan that Quicken recommended most highly for a particular user. It was an immediate success. The rate of loans captured jumped 15% to 20% per month on average, and sometimes as much as 30%. Though users had repeatedly expressed a desire to see more information and options, not less, it seemed they also valued advice when they trusted the source

When Numbers Lie

With apologies to Mark Twain, there are three kinds of lies: lies, damned lies and site logs. Site logs contain data about how users traverse a Web site, and various tools will mine the data for you. But Jared Spool, founding principal at User Interface Engineering (UIE), advises caution. "Site analysis tools tell you things, but they don't tell you the right things." For instance, he says, many tools will tell you the total time the average user spends on your site but can't distinguish whether the user is happy, lost or stuck for 20 minutes on the credit-card verification screen before logging off in disgust.

How quickly users browse a site is another metric many tools measure. Many site managers associate browsing speed with successful task completion. Another lie, says Spool. "Our experience is that the speed with which people move around the site has nothing to do with their usage patterns. I mean, we're not dealing with 7-11s here. You're not just running in and buying a carton of milk."

One large e-commerce site, a client of UIE's that prefers anonymity, lost significant development time and site revenue because it relied solely on site log data to diagnose a problem. The logs said 60% of customers who made it to the credit-card authorization screen didn't complete their purchases. It must be an issue of trust, the client thought, so it invested heavily in secure transaction servers and redesigned the site to tout its security.

Still, 60% of customers wouldn't go past the credit-card screen, so the client asked UIE to perform usability tests. The first of several users went shopping for a heavy, expensive laser printer. After finding it at an excellent price, the now-excited user went to the checkout and then through a series of screens where he typed in a billing address and shipping information. Then he got to the credit-card screen and aborted the transaction.

As it turned out, the user said he didn't feel comfortable giving his credit-card number out before seeing the total price, including shipping. An issue of trust, perhaps, but one that had to do with bad site architecture, not distrust of the seller. The company's decision to put shipping information after the credit-card screen was simple: It had saved the designers 30 minutes of programming. Testing, obviously, would have saved them even more.

Just how subjective a medium is the Web? Extremely. In another test, Spool found that users rated Amazon.com Inc.'s site faster than About.com Inc.'s – a major reason why they liked the Amazon.com site better. Paradoxically, Amazon.com's pages took an average of 36 seconds to download over a 56K-bit modem, while About.com's pages loaded in only 8 seconds. Spool's conclusion from watching how users traversed the site: Speed equals ease of information retrieval. "If you want to improve the perception of how fast your site loads," says Spool, "get users more quickly to the information they're looking for."

– Mathew Schwartz

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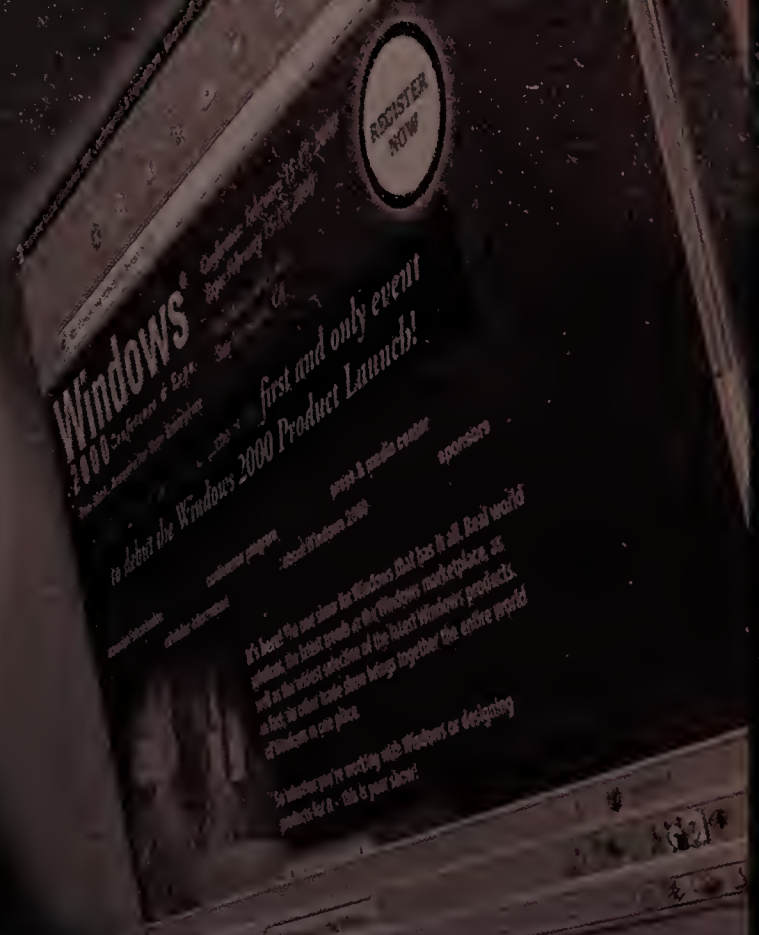

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A Competitive Edge In Collaborative Work

Project management tool uses Web-based collaboration to track a job's progress

BY AMY HELEN JOHNSON

TOM LIDDELL, vice president of operations at Medical Manager Midwest Inc., juggles about 400 projects that involve 180 people in 14 states. He keeps track of everything through Internet-based project collaboration software from Netmosphere Inc. in Palo Alto, Calif.

Netmosphere's Project Home Page and ActionPlan software products are bridges between the groupware and project management software traditionally used to link teams. Netmosphere's tools allow team members to access a central information store via an Internet interface, enabling them to work in different geographic locations.

Access to information is based on users' roles. For example, only certain people can assign tasks, but everyone can see the completed tasks list. This helps maintain corporate security.

The software relies on integration with external applications to provide the core project management and groupware features, such as Gantt charts and e-mail. In addition, because it's designed to handle multiple simultaneous projects, it has the means to resolve resource conflicts among projects, such as when one team member is assigned conflicting tasks for two projects.

Medical Manager, a South Bend, Ind., developer of software for medical offices, started out using Microsoft Project to organize its work. But Project couldn't keep up with the daily changes to the workflow, says Liddell, and consolidating all his projects into one information stream was nearly impossible. Priority tasks got lost. He found ActionPlan's HotSheet Java client software valuable because it presented individuals' tasks, their status and their deadlines.

"HotSheet gives us the ability to hold people accountable for what they're assigned to do," he says.

Netmosphere CEO Kevin Nickels says his products can help information technology departments save time, maximize resources and master complexity. These benefits are important because IT departments face a shortage of technical people, compressed business cycles and a workload weighted with large-scale initiatives such as switching to the euro currency or implementing enterprise resource planning systems.

The emergence of cross-functional teams that include everyone from senior executives to junior programmers is also driving demand for project management tools, says Nickels. "Most of the traditional views of project management are not collaborative," he says. "I've seen charts where the project manager is drawn as the center of the universe. The executives are on the outside." Netmosphere's tools allow everyone with a stake in a project to participate. "Everybody is on the team, and nobody is the overseer," he says.

Nickels says his company's products are best suited for knowledge-based projects where collaboration is key, not process-oriented projects that have rigid parameters.

CEO KEVIN NICKELS: Without easy-to-use project management software, managing can be harder than the project itself

Netmosphere Inc.

Location: 2225 E. Bayshore Road, Suite 100A, Palo Alto, Calif. 94303

Telephone: (650) 855-0430

Web: *www.netmosphere.com*

Niche: Netmosphere makes browser-based project management and collaboration software that eliminates geographical and organizational boundaries.

Why it's worth watching: Netmosphere software gives project management an Internet architecture, which can lower administration costs and hassles. It can also be used for internal projects.

Company officer: Kevin Nickels, co-founder, president and CEO

Company goal: At $25 million in annual revenue, the firm will consider an initial public offering.

Milestones:
- Feb. 1996: Company is founded
- April 1997: ActionPlan is launched
- June 1998: Project Home Page is launched

Employees: 35; growing at a rate of 33% per year

Profitability date: 1997

Burn money: Menlo Ventures, Charter Ventures and private individuals

Customers: @Home Corp., J. Walter Thompson Co., Bank of America Corp., FMR Corp. (Fidelity Investments)

Partners: Apple Computer Inc., Cisco Systems Inc., Microsoft Corp., Sun Microsystems Inc.

Red flags for IT:
- Big dogs are nipping at Netmosphere's heels. The biggest, Microsoft Project 2000, could give Project Home Page a severe bite. And established project management vendors like ABT Corp. and Primavera Systems Inc. are moving into Netmosphere's Web niche.
- Analysts say the company needs to do a better job of marketing and finding business partners.

COMPUTERWORLD emerging companies

Facing Competition

Real-time communication and discussions are Netmosphere's key benefits, says Matt Light, an analyst at Gartner Group Inc. in Stamford, Conn.

Although the company has been an innovator in the field of project collaboration, it's still a small player, says Light. The big, established project management companies are already adding copycat features into their upgrades, he says. They may not be as fully collaborative as those in Netmosphere, but they're good enough for many organizations, so Netmosphere needs to keep innovating to maintain its advantage. Expanding into managing and analyzing requirements documents is one possible direction, he adds.

Liddell says he'd like to see improvements in reporting functionality in future releases. He wants to be able to create reports based on the type of project or geography, to see details on certain progress lines within a project and to analyze the overall project portfolio to answer questions about where employees are spending the most time and to identify areas of improvement.

But reporting features are secondary to the collaboration capabilities, says Liddell. Every project goes into ActionPlan. "It's our lifeline right now," he says. "Our whole operating structure is built around Netmosphere." ◗

Johnson is a Computerworld *contributing writer in Seattle.*

[the buzz] STATE OF THE MARKET

Collaborative Competition

Netmosphere has two main competitors that offer project collaboration software using Java-based thin-client architectures. It also faces competition from several project management and groupware vendors that are building collaboration capabilities into core products.

TeamCenter

Inovie Software Inc.
San Diego
www.inovie.com

TeamCenter is aimed at much the same target market as Netmosphere's products – teams that are developing products, especially in the technology arena, says Matt Light, an analyst at Gartner Group. Inovie released Version 3.0 of TeamCenter in December. New features include a document repository, a portal that gives individualized views of documents, report writers to tap the integrated SQL database, user roles and Web-based time cards.

WebProject

WebProject Inc.
San Mateo, Calif.
www.wproj.com

Like its rivals, WebProject has a portal for holding common documents for viewing by all team members, integration with Microsoft Project for Gantt-chart time lines and discussion groups for sharing ideas and hosting virtual meetings. It leans a bit more toward the traditional scheduling and tracking features than Netmosphere's products, says Light.

Other Competitors

The only competitor in the groupware arena is Notes from Lotus Development Corp. Several business partners have created project collaboration applications that use Notes as the underlying groupware engine and Domino as the Internet access piece that lets the application support distributed teams.

Primavera Systems Inc.'s TeamPlay, PlanView Inc.'s PlanView Software and ABT Corp.'s Results Management Suite are traditional project management suites that are moving into collaboration.

But the one to watch out for, says Light, is Microsoft Corp.'s Project 2000. The new release ships with a product called Project Central that adds collaboration capabilities, like browser-based access for users who don't have Project on their desktops and views of each team member's tasks on Gantt charts.

– Amy Helen Johnson

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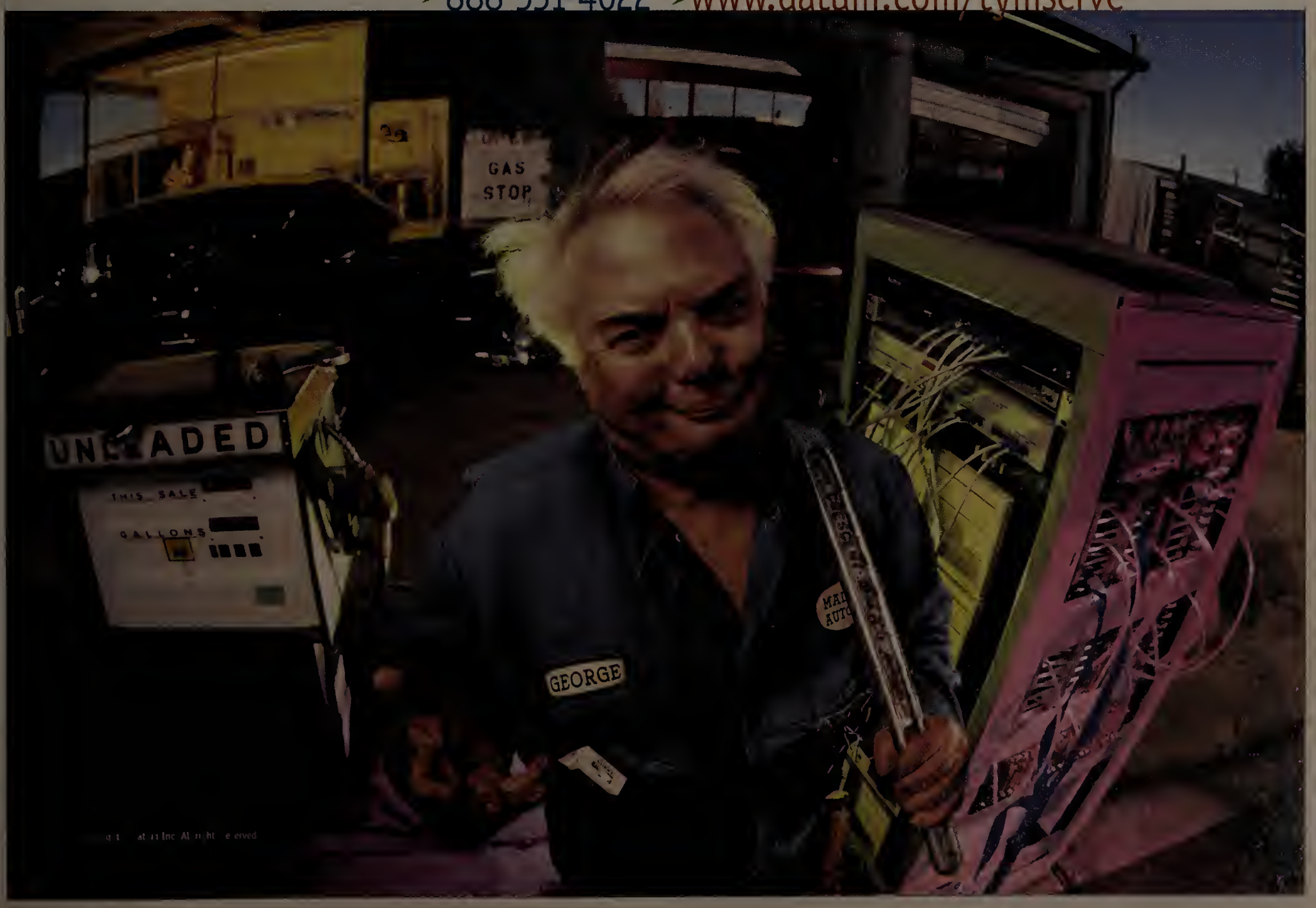

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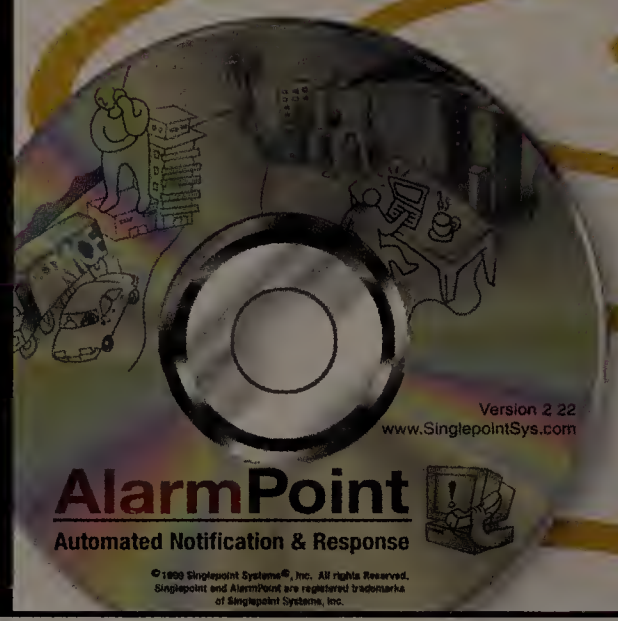

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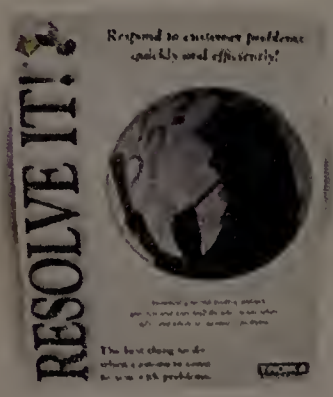

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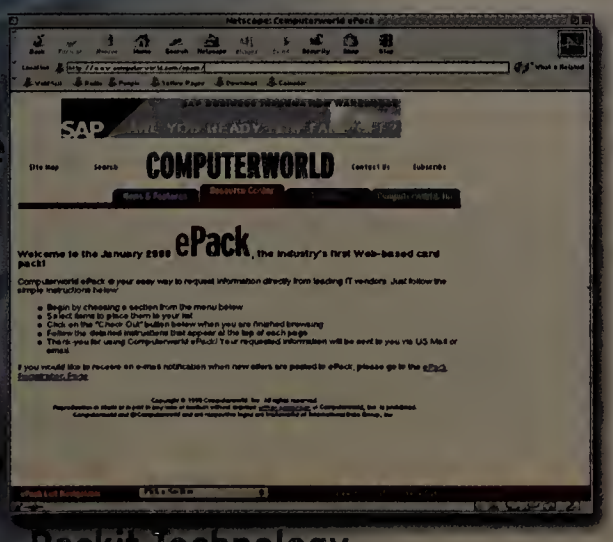

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Telecom Mergers Fueling Mega Job Opportunities

Faced with a widening skills gap and growing staffing needs, the telecommunications industry is reaching out to more nontechnologists and recruiting in nontraditional areas.

BY JILL VITIELLO

THE BIG NEWS in telecommunications is about megamergers — where the revenues at stake have more digits than a telephone number. What will it all mean to information technology professionals in that industry? Nothing but net gain, say many staffing experts.

Consider the case of Sprint PCS Group. "Sprint PCS is on the verge of becoming part of the largest telecom company in the world and the fastest-growing wireless company in America, in terms of adding new customers," says John Yuzdepski, vice president of product management and development at the Kansas City, Mo.-based subsidiary of Sprint Corp. "People here are excited about that and motivated. It also makes recruiting a little bit easier."

It's a good thing, because the telecommunications industry is so hot, it's generating new IT jobs far faster than companies can fill them.

While mergers often translate into staff reductions, "we don't see a lot of fallout from the telecom mergers," says Rita Cook, president of Professional Recruiters Inc. in Bethesda, Md. "Telecom companies are so anxious to get people on board that they want them to start right away — forget about three weeks or a month from the time the offer is accepted," she says. Like many hot industries for IT professionals, qualified candidates usually can choose from among several offers, Cook says. Some accept a job with one company, only to take another job instead. New hires often bolt for better opportunities.

"People are the major issue. There are just not enough of them," says Yuzdepski. But not just anyone will do. "Everyone in the value chain must be capable of original thought and be able to move quickly."

This demand for combined skills and intelligence is also taking its toll on payroll. "A good candidate will have three or four offers," says Yuzdepski. "We make our offer compelling, with salary ranges that are competitive not just in Kansas City but in all the areas we target." The company also offers bonuses, incentive programs and stock options, he says.

Skills That Thrill

The industry's most sought-after skills are in data warehousing, project management and Java programming, according to IT hiring managers. Others skills are in high demand as well.

"Systems integrators are needed by start-up telecom companies that bring in COTS — commercial off-the-shelf software — for order entry, billing and provisioning," says Linda Church, a 15-year veteran of the telecommunications industry and former senior manager at MCI WorldCom Inc. in Washington.

Basically, "the demand for IT skills goes across the board," says Philip Arnold, director of software development and applications in IT at TeleCorp PCS Inc. in Arlington, Va. "We are continuing to hire aggressively this year," says Arnold, who says he expects to bring on people in systems, network, applications and database administration, plus desktop support and applications development.

Numbers Game

How do telecommunications companies lure the top talent? "We've seen an increased use of stock options across the corporation to retain and recruit," says Jeanne Sokol, a human resources leader at AT&T Bell Laboratories in Middletown, N.J. In addition, AT&T's technical career plan gives IT people dual opportunities for career advancement — either as individual contributors or in supervisory roles.

"The biggest motivators for our people are the opportunities for working in new territory, making meaningful contributions and growing in ways they wouldn't be able to anyplace else," says Sokol.

Working around the skills shortage, Sprint PCS develops talent in-house by providing non-IT people with technical training, according to CIO Sherry Browne. "We're looking for project managers and team leaders who understand the business, are flexible and can make split-second decisions," Browne says.

"The industry is looking for new blood," says Kelly Coleman, a recruiter at Manpower Telecom, part of Manpower Professional in Atlanta. "Telecom is a good industry to start at the ground level and move up in."

Coleman's clients — major telecommunications switch manufacturers — hire technical school and college graduates and train them to install, test and maintain switches that link voice and data transmissions around the globe. For those with more experience, telecommunications companies need network analysts and anyone with expertise in video transmission. "Now that voice and data are running pretty well, the next hot trend is video," Coleman says. ◗

Vitiello is a freelance writer in East Brunswick, N.J.

Advice for Job Seekers

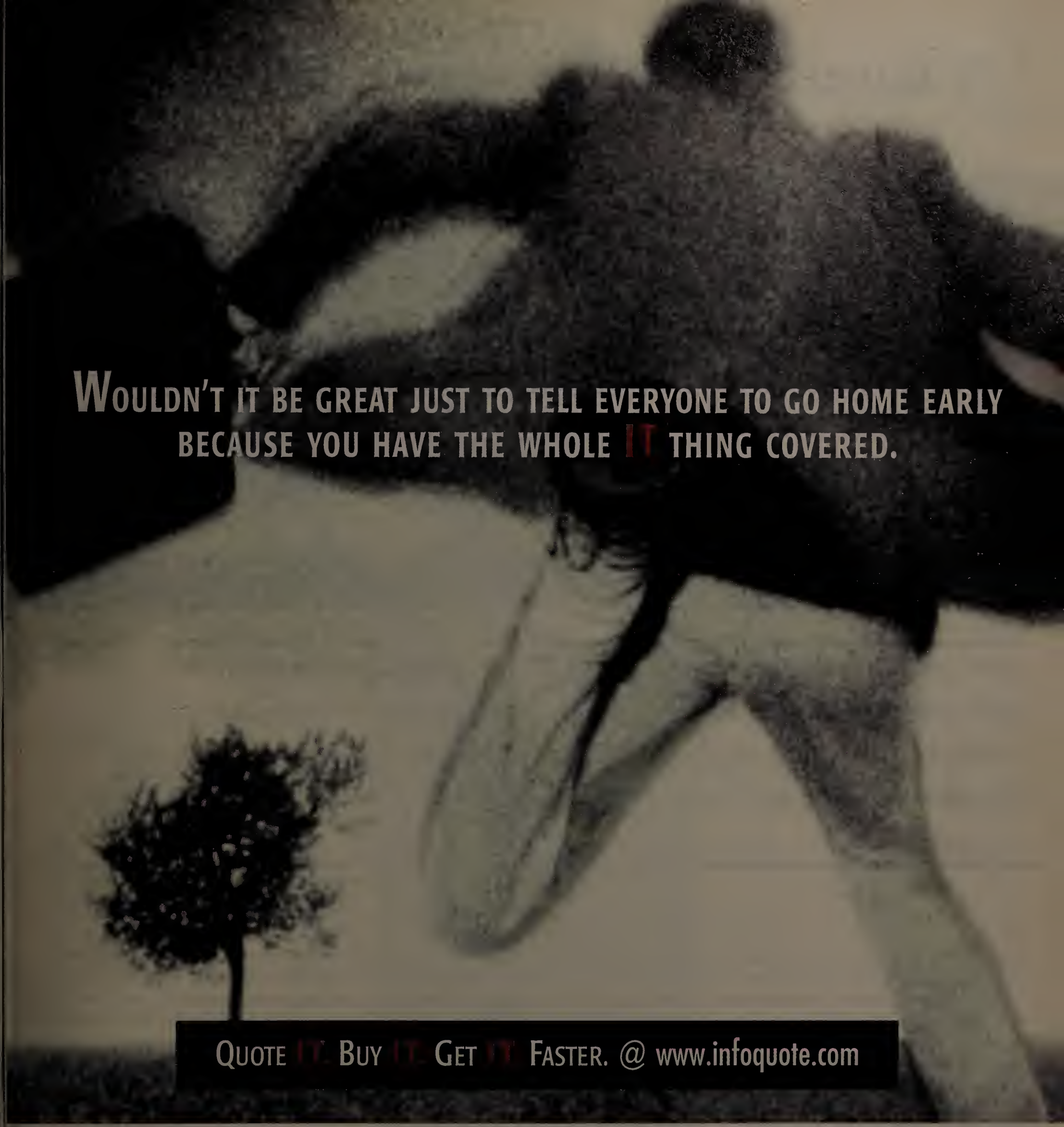
"Know your priorities up front, because in today's telecom job market, as soon as you make yourself available for consideration, you may have to evaluate very different offers in terms of opportunities, compensation, work environment, responsibilities and location."
– Philip Arnold, director, software development and applications in IT, TeleCorp PCS Inc.

"Don't be afraid to leverage your skills. Be flexible and willing to do a variety of things. Use your existing IT knowledge to help you learn more about telecom."
– Rita Cook, president, Professional Recruiters Inc.

"We never stop recruiting; we are always looking for the next great candidate. Send your résumé, call and keep calling. Don't lose patience."
– John Yuzdepski, vice president of product management and development, Sprint PCS Group

"The telecom industry is an area of great exploration. Constant change makes the industry fun. It will satisfy anyone who wants to learn."
– Linda Church, telecom industry staffing expert

"Telecom is not for the faint of heart. If you want 25 years and a gold watch, don't come to work here. We're on the cutting edge of everything that's happening in the world. The industry is dynamic, interesting, extremely volatile and fun."
– Sherry Browne, CIO, Sprint PCS Group



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IT Careers in E-Business/E-Commerce

At the speed of the Internet

by Carole Hedden

There was a time when businesses set goals and strategies based on five-year horizons. Then came truly long-term planning, on a 25-year horizon. With the advent of e-business and the Internet that's all changed. Businesses are planning on the basis of milestone-to-milestone, where time collapses and the company with the most speed and agility wins.

Ernst & Young
Nationwide

In the early 1990s, companies focused on re-engineering, and later in the decade the focus was on enterprise resource applications to pull together diverse information in a single source. "Now we are focused on connectivity — business to business, business to consumer and business to employee," says Bruce Ferguson, national director of recruiting, Consulting Services. "Ernst & Young focuses on converting startup dot-coms into dot-companies and transforming mature companies into dot-companies. We're at the forefront of leading our clients and ourselves to think and implement with the speed and flexibility demanded in a globally connected economy."

With that mission in mind, Ernst & Young is seeking qualified candidates in application development, database design and architecture, network architecture and object-oriented design using Java and VC++. "Those technical skills need to be accompanied by learning agility, the ability to apply previously learned knowledge and experience to new situations and the ability to adapt quickly to change. We're a highly team-oriented organization but you will have the opportunity, in many ways, to self-direct your career," adds Ferguson.

Ferguson says the tradition of establishing career paths has given way to a more flexible career of learning. "It's difficult to plot a conventional career path. You have to plot your own course and team with people at Ernst & Young to help you get there. There are jobs today that weren't even thought of three years ago," says Ferguson. "And three years from now there will be completely new jobs."

Ernst & Young is one of *Fortune* magazine's 100 Best Companies to Work for in America. "We're a leader in the area of e-commerce," says Ferguson. "We have a strategy and an urgency about where we are going as a business. One thing keeping us on the edge is our KnowledgeWeb, which has been cited for excellence within the industry and which helps employees to continuously share and access information across the organization, 24 hours a day."

Ernst & Young's potential merger with CAP Gemini is another plus. "If finalized, this combination with Europe's leading management consulting and information technology services firm," says Ferguson, "will create the world's leading global consulting firm."

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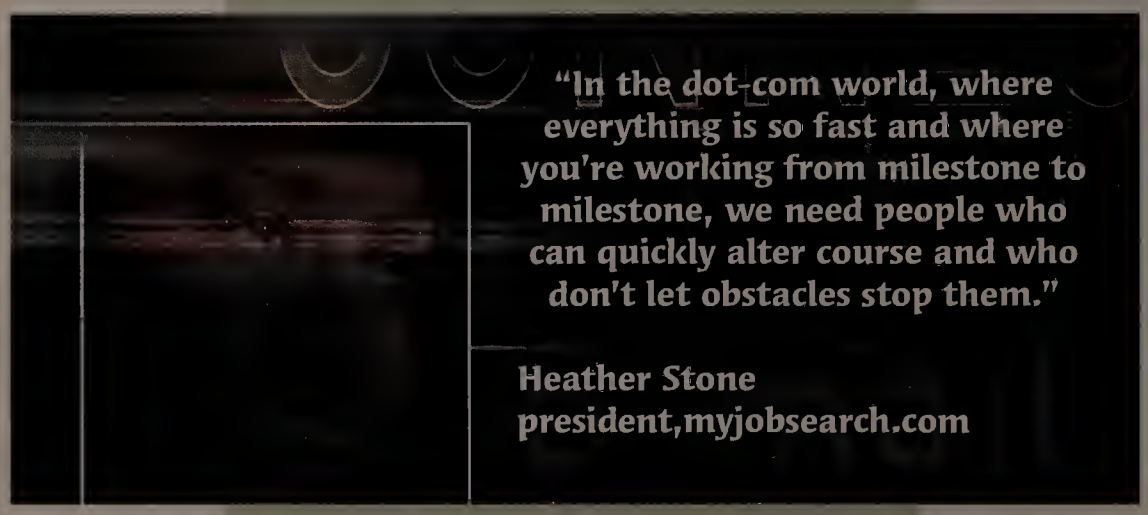
IT Careers in E-Business/E-Commerce

eWork Exchange, Inc.
San Francisco, CA

In less than a year, eWork Exchange has grown to just over 30 employees providing an online marketplace that brings together projects and independent professionals, whether here in the United States or spanning the globe.

The secret is in the technology that makes the linkage work. Using the Internet, eWork Exchange has built an exchange for project-based work that allows companies to tap into technical expertise without relocating people.

"Our idea is to be the NASDAQ of human capital," says company CEO Hans Bukow. "We are developing a database of expertise to help companies respond to the market. Our business model couldn't exist without the Internet. We're providing a business to business work services company that puts people and projects together, working electronically."



eWork Exchange also provides services for the full cycle of a project, including benefits, training and virtual workplaces that use sophisticated collaborative technology. "Our customers are pioneering this new work environment," says Bukow. "And that requires eWork Exchange to stay on top of the technology, developing new business models that work on an international level."

Bukow has, himself, used e-working professionals but also seeks permanent people with experience in web-based/ Internet technologies, application development and implementation.

"E-work and our model are the purest use of a dot-com approach in the information economy," Bukow adds. "We're developing an education element for the eWork Exchange to teach our customers new skills and the process of e-working. We help bridge the end of one project with the beginning of the next project, providing a continuous pipeline to the independent professional."

Myjobsearch.com
Salt Lake City, UT

Seven months ago, Heather Stone launched a company dedicated to helping people quickly and easily use the Internet to find jobs they love. Myjobsearch.com provides the template an effective job search, and the company now operates its own site and develops sites for other organizations, ranging from companies to universities.

Stone, the company's president, says the idea began because there currently is no service that really gets results for people in their quest for a job. "Most people spend hours looking for posted positions, but we know that the way to get a job is through contacts and doing things proactively — not simply waiting for a job announcement," says Stone.

Myjobsearch.com provides those contacts, as well as online coaching on how to get the best results. "We're using technology to add value," says Stone. In the seven-month-old company's fourth month of operation, it recorded more than 1 million page views.

"We are looking for people to make this possible for others," says Stone, "and the two most important hiring criteria are versatility and relentlessness. In the dot-com world, where everything is so fast and where you're working from milestone to milestone, we need people who can quickly alter course and who don't let obstacles stop them."

Stone plans to hire approximately 150 people in 2000. "We're licensing our type of services to other web communities. We'll be providing the technology as well as the content," she explains. "We need technical people, as well as marketing and infrastructure people."

Technical skills are highly specialized for those with DB environment experience and a track record in Internet development that combines programming with user interface. "We also need those who can conduct Internet research, analysis and writing — what we call content architects," says Stone. In addition to the technical expertise, Stone is looking for people who have strong skills in interacting with others. "Our business is making people happy at work, so we practice the skills we try to share with others."

Due to the speed at which Myjobsearch.com is growing, Stone has had to learn to be flexible. "We are in a bigger hurry and can't spend so much time on relocation. We have a tendency to hire people who can operate as free agents, people who want to take charge of their future," she adds. "We have a substantive business proposition that is based on helping others manage their careers effectively. That need will outlast any fads."

recruitDYNAMICS.com
New York, NY

Providing temporary information technology expertise is the business of recruitDYNAMICS.com™. However, the company's approach departs dramatically from its peer companies.

Company founder and CEO Mark O'Brien says recruitDYNAMICS.com is the merger of the Internet and a three-year-old IT temporary consulting firm. "Our model is built on being open, fair and honest," says O'Brien. "We open new markets for IT experts, similar to operating as the NASDAQ of this industry. Instead of recruiters, we are staffed with market makers, the people who will find new opportunities for the independent IT professional."

recruitDYNAMICS.com lists IT experts and matches them with appropriate companies. "We do this through a proprietary software that automates the process," says O'Brien. "It reduces the middle person, allowing the consultant to negotiate directly with the companies."

Skills needed for the database are those most sought after by today's companies: e-business, networking, database management, application development and implementation in the Internet environment. recruitDynamics.com then pairs up the independent IT consultant with firms such as Chase, Canon USA and the Home Shopping Network.

In addition, recruitDYNAMICS.com helps independent consultants identify needed training and education and evaluate these courses in terms of quality and cost.

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SCIENT
San Francisco, CA

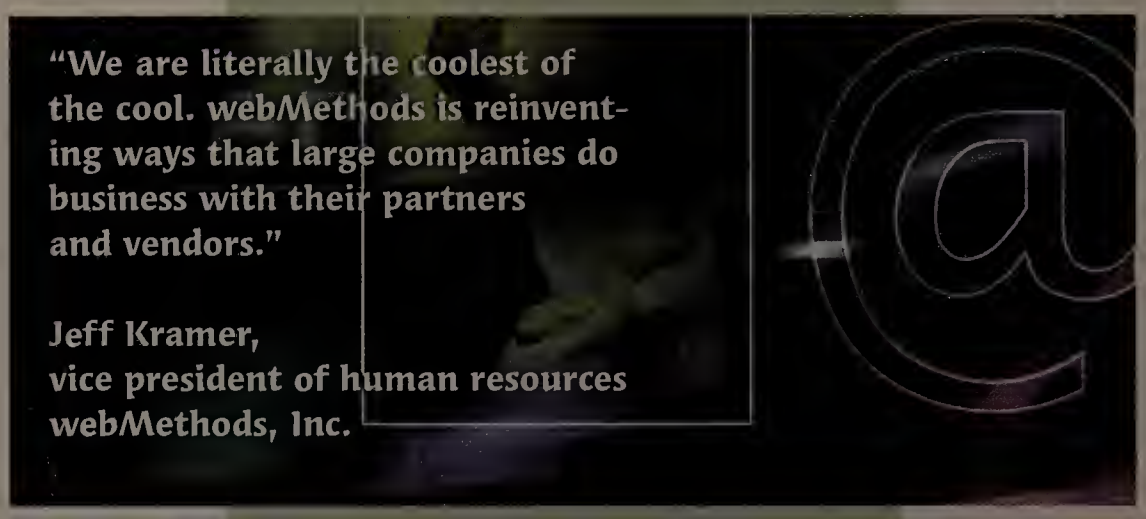
In less than two years, Scient has claimed the banner of fastest organically grown professional services firm in history. Without acquisition or merger, the company has grown to more than 874 employees and revenue in the third fiscal quarter, which ended Dec. 31, 1999 of $42.7 million, a sequential increase of 39 percent from revenues for the second quarter, which ended Sept. 30, 1999.

Tom Schreiber, director of recruiting, says the company's growth rests on its ability to rapidly deliver results for clients who are creating e-businesses. "We develop e-business strategies for companies and do it extremely rapidly, within two to eight weeks," says Schreiber. After a strategy is conceived, Scient architects, engineers and delivers e-business capability for companies. "Finally, we partner with our client to re-innovate their businesses to extend their competitive advantage and create massive shareholder wealth," he adds.

Clients range from dot-com companies to the Fortune 500, including Homebid.com, Johnson & Johnson, Hewitt & Associates, Chase.ONLINE and CARSTATION.

Applicants to Scient complete a three-stage interview process that includes Role Fit interviews for core skills, Values interviews to assure alignment between individual and the company, and Expectation Setting. "We have a strong set of values," says Jamie Sanger, who's in charge of NY recruiting for Scient, "that include spirit, community, growth, innovation, excellence and urgency. We want to make sure that we hire people who possess those same values."

All Scient colleagues are equity owners in the company and are evaluated on the basis of their contribution to the company, as well as client and colleague satisfaction. "You'll continue learning from the day you start at Scient," says Schreiber. "We have the most legendary employees in this space, and you'll begin on the first day to share knowledge with others and to push yourself on the projects we innovate for our clients. You'll have a sponsor who will work with you on your personal and professional growth, as well as on your career development plan. Through the Scient Zone, which has won numerous industry awards for being the premier internal Intranet, you will have access to all of our frameworks, deliverables and research."



THOMSON CONSUMER ELECTRONICS
Indianapolis, IN

Based on a century-long history of RCA and an aggressive new century approach to the consumer electronics business, Thomson is connecting to its customers through business to business and consumer e-business services.

For example, www.thomsondealer.com allows customers to access invoice information, check on order status and access current product information. "Now we are implementing the technology to dig deeper into our supply chain, giving our partners more information about the status of their orders to help them better serve our shared customers," says Craig Casner, B2B project manager at Thomson.

With these projects, Thomson is looking for information technology professionals with Internet development skills in both Microsoft and Vignette tools. "We look for the ability to work within a fast, competitive environment, with a company that offers exciting consumer products," says Casner. Thomson develops and markets digital products, to include high definition television, digital satellite systems and digital audio.

"As a member of the IT team, you'll be touching every aspect of our business," adds Casner. "We provide the information technology professional the opportunity to study and work with the latest technologies. Also in Indianapolis, you have access to Indiana and Purdue Universities"

Thomson Multimedia had sales of $6 billion in 1998 and has 48,000 employees in more than 30 countries. The company is the fourth largest global supplier of consumer electronics products. Thomson Consumer Electronics makes and sells RCA, GE and PROSCAN-brand home entertainment products, including the popular RCA DirecTV System.

"The opportunity for growth with this company is astronomical for someone who wants to learn and take on new challenges. We hired more than 160 new people in 1999 and will hire another 175 people in 2000," says Casner.

WEBMETHODS, INC.
Fairfax, VA

Helping large companies more effectively do business with their suppliers and customers is the basis of operation for webMethods, Inc. The company, founded in 1997, has grown to 200 employees and expects to double in size by year-end 2000.

"We are literally the coolest of the cool," says Jeff Kramer, vice president of human resources. "webMethods is reinventing ways that large companies do business with their partners and vendors." The company is offering its business-to-business e-commerce integration expertise across industry, from high-tech manufacturing to chemical processing, from financial services to telecommunications.

Skills are needed in engineering, development and professional services in which employees follow up the purchase of webMethods technology to assure customers succeed. "It's helpful to have XML, Java, C++ skills, plus experience in large-scale ERP implementations.

"We have a unique value proposition for employees," says Kramer. "We offer exposure to leading technology, the vision of a growth business, leadership, teaming, integrity and fun. You'll maintain your marketable skills because you're working at the forefront of a trillion-dollar industry. Our goal is to make you reluctant to leave webMethods."

Kramer says the young company values work and achievement, not seniority or status. "We need people who are willing to take risk to add value for our customers in a variety of disciplines."

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PRODUCT MANAGER

Perform analysis and create solutions that match vendor services with client needs. Requires 5-10 years experience in technology field (preferably in financial services), programming knowledge (specifically designing code for interfacing multiple systems), thorough understanding of banking back office systems/processes, and ability to travel. Computer Science degree helpful.

INTERFACE COORDINATOR

Perform client requirement analysis for developing interfaces between our proprietary server application and various third party applications. Requires thorough understanding of Internet banking functionality, project management experience and ability to travel. Implementation or programming experience and MIS degree preferred.

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Will provide software consulting services relative to industrial control/automation software products as a part of program to provide general advisory services to customers. This consultant will review customers' existing systems and advise customers on upgrades and new products. Services will include high level systems analysis, post implementation audits, developing system prototypes and other types of project work which will involve working with NT, COM/DCOM, SQL Server and Visual Basic. Will provide project leadership and oversight, implement deliverables, and negotiate and create schedules for the Statement of Work utilizing strong knowledge of full application development cycle. Interact significantly with both the customer and channel community; provide feedback to Marketing and Engineering on product usage and benefits. Provide mentoring to Consulting Engineers. Assist with the formulation of department specific policies and workflow of the Consulting Services department. Requires: B.S. in Computer Science, Electrical Engineering or related field and 5 years of experience in Development and IT Consulting. Strong communication and presentation skills.

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- Good knowledge of TCP/IP programming
- Knowledge of other telecommunication protocols such as SS7, ISDN PRI etc. would be an added advantage

Human Resources Manager: 5 to 8 years of experience in the software industry with experience in following key areas:
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- Planning and performing recruitment activities
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Mr. Michael Hyman
Fundtech Corporation
157 Technology Parkway, Suite 100
Norcross, Georgia 30092

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Member of Technical Staff

Conduct research and development in the area of telecommunication network operations and management. Responsible for core infrastructure development of intelligent computer algorithms and processes in an existing large scale network management platform. This position involves development and implementation of artificial intelligence algorithms for event management/correlation and the supporting computer environments. Implementation is done in UNIX client/server environments using C/C++, embedded SQL/Informix database programming, and involves extensive visualization and GUI building using Motif and Java. Support is performed by fixing bugs with gdb and dbx debugging tools, and developing the appropriate test software using shell scripts. This position involves deployment tasks as well as documentation and publication of engineering results in academic and industry journals. MS in Computer Engineering. 3 years exp. or 3 years experience in software development and systems engineering in a university, national or private sector laboratory. Experience must include: Hands on experience in C, C++ Object-Oriented Programming. Excellent knowledge of embedded SQL/database Programming & Experience with GUI components design and implementation in motif and Java on UNIX platform. 40 hours per wk 8:00a.m.-4:30p.m. $67,500 per year. Applicants should send resume in duplicate to Case#19982983. PO Box 8968 Boston, MA 02114.

Software Engineer: Maintain & enhance Encoder software & hardware, a complex realtime machine control hardware & software developed in C/C++ under Windows NT/Windows 95, which digitizes analog video into MPEG2 digital video; Qualify the stability, functionality & video/audio quality of new encoding hardware; Develop other Windows NT C++ complex software & hardware systems to enhance digital & insertion system; Evaluate, recommend & help partners & customers to use 3rd party software ad hardware package related to encoding or playback of digital & analog video material. 40 hrs/wk, $67,500/yr. Requires Masters Degree in Computer Science, Computer Engineering or Systems Science, 6 months experience developing complex s/w packages in realtime system & machine control, Graphics User Interface, & Visula C++ (exp may be concurrent w/Masters); Demonstrated knowledge of developing software components in RS 232 communication protocol, ISA/PCI board programming, distributed system, TCP/IP and multiple threading. Must be US citizen, permanent or lawful temporary resident, refugee or asylee. Send 2 resumes to Job Order 19982841 P.O. Box 8968, Boston, MA 02114.

Applications Software Consultants

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Programmer/Analyst

Manhattan, NY

You will analyze product requirements and translate them into detailed system functionality by working with internal organizations and clients; develop architectural components in support of business requirements; develop applications in support of business requirements; develop standards for application development; create system and program test plans and procedures; develop test data and perform unit testing ensuring that the programs perform according to specifications; investigate system and computer programming problems and propose solutions and recommend design improvements for increased efficiency. A minimum of a Bachelor's degree in Computer Science, Engineering, Mathematics or Physics and one year of experience as a Programmer/Analyst is required. Job is 40 hours per week, 9am-5pm. Salary commensurate with experience. Please send cover letter and resume to: Ms. Donna Taxier, ADP, Inc., 1 Park Ave., New York, NY 10016; Fax: (212) 981-1400; E-mail: **dtaxier@lx.netcom.com**
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Sr. Systems Engineer

(Burlington, MA) Write automatic tests and perform systems test functions on software and hardware for IP/ATM (Internet Protocols/Asynchronous Transfer Mode) Telecommunication/Networking products. Review and modify systems architecture, features and requirements as required. Evaluate tests, equipment and software tools. $71, 052/yr, 40hrs/wk, Mon.-Fri. 8:00A.M. - 5:00P.M. REQD: Bachelors in Communications or Electronics Engineering and 5 yrs exp in job offered or 5 yrs exp in Computer Engineering any field. Experience to include internet Protocols (IP), routing and ATM switching, network design, UNIX and C. Send resume in duplicate to: Case # **19982813, P.O. Box # 8968, Boston, MA 02114**

Sr. Software Engineer: Analyze, dsgn & implmt comp applics & prgms using C, C++, & Visual Basic under Win NT & Unix. Implmt network connectivity & communication using signals & sockets over TCP/IP connections & Comp Telephony Integration (CTI). Dsgn & implmt complex dbase structures incl Oracle in a distributed envrmt. Reqs MSCS & 2 yrs exp dsgng/dvlpg s/ware applics. Demonstrated knowl of C, C++, Visual Basic, Win NT; use of signals & sockets over TCP/IP, CTI; Oracle, PL/SQL package, procedures & dbase tables in a distributed envrmt & Unix. 40hrs/wk. $68K/yr. Send 2 copies of resume to case#19983036, PO Box 8968, Boston, MA 02114.

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Computer Software Application Engineer

wanted by Software Dvlpt & Database Dsgn Co in Seekonk, MA. Must have Bach or equiv in Comp Sci or equiv & 1 yr exp installing, configuring, establishing, optimizing & debugging PC based Human Resource database applics. Respond to: HR Dept, Saria Software LLC, 699 Fall River Ave, Seekonk, MA 02771.

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Systems Engineer

needed to analyze business reqmts, architect infrastructures to support implmtn of s/ware & dsgn tools, and dsgn filesystem layouts. Apply to: J. Kealy, Universal, 4 Greentree #205, Lincoln Dr, Rt. 73, Marlton, NJ 08053.

Network Administrator

needed to install, modify, maintain servers/workstations & tune network & Cisco routers. Apply to: J. Kealy, Universal, 4 Greentree #205, Lincoln Dr, Rt 73, Marlton, NJ 08053.

Programmer Analyst

$57,000 per year. 40 hrs/wk, 8:00 am - 5:00 pm. Application programming in C & JCL languages on UNIX & mainframe based network environment. Designing & implementing large scale projects. Maintaining & programming DB2 (DataBase 2) & Informix databases on UNIX & mainframe platform. Designing & implementing a database management system on UNIX platform. Require a BS in Computer Science or Management Information System or will accept MS in Computer Science or Management Information System & two years on the job experience or two years of experience as a Programmer Analyst, which must have included programming in C Language & databases in the UNIX environment. Send resume & cover letter documenting minimum qualifications to: Attn: Michele Spencer, Technical Recruiter, AutoZone, Inc. 123 S. Front Street, Memphis, TN 38103, EEO.

Sr. Programmer Analyst

needed by Restaurant Franchising Co. in Ft. Lauderdale, FL. Must have BS in Comp Engg & 4 yrs exp planning, dvlpg, testing & documenting comp prgms & evaluating user requests for fin'l mgmt systms. Respond to Mr. Suls, Triarc Restaurant Group, 1000 Corporate Dr, Ft. Lauderdale, FL 33334.

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Senior Software Engineer

Design and develop XML based products and software. Gather requirements from clients and propose alternatives. Analyze and interact with client companies. Supervise developers. Work with PC, Sun Ultra, Java, C++, Visual Basic, Metrowerks Code Warrior, Windows NT, Sun OS, Corba, Swing and RMI. Several positions available. Must be willing to travel and relocate as required in NH and other locations in U.S. Req'd: Master's Degree or equivalent in Computer Science, Engineering or related field and 3 years experience in the job offered or in a related occupation-Computer Professional. 40 hours/week 9a.m. to 6 p.m. $85,000 per year. Send 2 copies of your resume/letters to: Job Order #2000-094. P.O. Box 989, Concord, NH 03302-0989.

Software Engineer

Design and development of an interactive Graphical User Interface (GUI) based client/server application to support inventory, configuration and network management operations under AIX environment; Demonstrated ability in C/C++,; Demonstrated ability in X-Windows/Motif; Demonstrated ability in RDBMS (Sybase/Oracle). Requires M.S. in Comp-Sci., Math, Engg or related field plus 2 years experience in job offered or in software development. 40 hrs/wk, 8:00 a.m. to 5:00 p.m.; $70,000/yr. Send two (2) copies or resume/respond to: Case #19983050, PO Box 8968, Boston, MA 02114.

SOFTWARE DEVELOPER: Will develop application level programming, User Interface design and implementation for Networking Test Tools. Will develop software and firmware in C and Assembly languages in UNIX and Window 95 environments. Requires: Master's degree in Electrical Engineer-ing or Computer Science. Demonstrated ability in software and firmware development using C and Assembly knowledge and GUI tools such as Visual C++. Demonstrated ability to develop device driver firmware. 40 hrs/wk(8 to 5); $57,4000/yr. Send two resumes/responses to Case No. 19982962, Box 8968, Boston MA 02114.

Software Engineer

Design, develop and implement application systems in Windows environment. Develop software systems using Powerbuilder, Visual Basic, Sybase, Oracle, on LAN's under MS-Windows operating system. Design and implement software using C, C++, and analyze and determine user requirements. B.S. (comp sci, eng. rel field/equiv) and 5 yrs. exp. 40 hrs/wk. Send resume to: Human Resources, 128 Software, Inc., 44 Wood Avenue, Suite 1, Mansfield, MA 02048.

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Device Driver Software Engineers
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VoIP System Architecture Engineers
Telecom Software Engineer (PSTN)
SNMP Software Test Engineers
Product Marketing Managers
Marketing Communications
Marketing Intelligence Specialists
Software Integration Test Manager
Regulatory Project Manager
SDRAM Hardware Engineer
Network Interface Engineers
RF/Cable Head-End Hardware Engineer
Component Engineer
Applications/Systems Engineers

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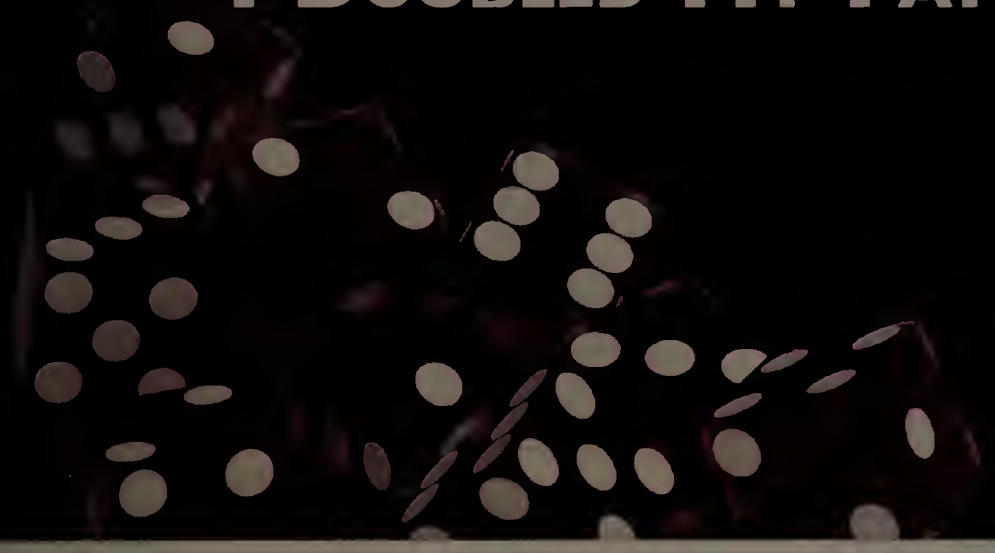

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Position for Analog Design Engineer. Colorado Springs Area. To interpret clients' specifications for Application Specific Integrated Circuits (ASIC), and to design and simulate high speed analog and/or mixed signal circuits (such as A/D, D/A, preamplifier, and optical electronic circuits) to meet clients' specifications. To layout the circuits using knowledge of analog and digital crosstalk effects on circuits' performance, perform design verification using DRC, LVS, and other verification tools, and build high frequency testing circuits and testing software using C, Visual BASIC, and GP-IB interface control codes to perform chip testing, evaluation, and debugging of circuits. To assist team members on problems with circuits. Must have a Master's (or equivalent foreign degree) in Computer Science, Electrical Engineering, or a related field plus three years of progressive experience in Designing and/or Testing Analog/Mixed Signal Integrated Circuits, or a Bachelor's (or equivalent foreign degree) in Computer Science, Electrical Engineering, or a related field plus five years of progressive experience in Designing and/or Testing Analog/Mixed Signal Integrated Circuits. 40 hrs./wk, M-F, 8:00 a.m. to 5:00 p.m., $64,750.00/yr. Apply by resume to: Colo. Dept. of Labor & Employ., Employment Programs, ATTN.: Jim Shimada, Tower 2, Ste 400, 1515 Arapahoe St., Denver, CO 80202-2117, and refer to order # CO 4646163.

SENIOR SOFTWARE ENGINEER

Lead small to large project plans, schedules and priorities; oversee overall system specification; develop functional and design specifications; code, debug and test subsystems. Provide technical guidance, identify project dependencies, inspect specifications and assist in resolution of critical issues, determine equipment needs and manage testbed resources. Resolve all bugs and problems in a product area, design fixes for complex system problems and produce functional and design specifications for projects. Develop products in a C/UNIX environment with specialization in Telecom Switching Software development. 40 hrs./wk.
Must be US citizen, permanent or lawful temporary resident, refugee or asylee. Send 2 resumes to: Job Order #19982879, P.O. Box 8968, Boston, MA 02114

SOFTWARE ENGINEER. (Multiple Openings) Design, develop and implement computer software systems, HACMP, ADSM in an IBM AIX, HPUX environment, as a UNIX Systems Administrator with certifications in SAP R/3 BASIS and ORACLE DBA; Analyze client software requirements to determine feasibility of design within time and cost constraints as an SAP R/3 BASIS and Unix Systems Administrator; Consult with hardware and other engineering staff to design interfaces between hardware and software, and operational and performance requirements of overall clients computer systems in an IBM, AIX, HPUX, SAP R/3, Oracle environment; Formulate and design software systems using various industry models to predict and measure outcomes of design as a certified SAP R/3 BASIS, certified ORACLE DBA and Unix Systems Administrator; Design and develop software testing procedures, programming and documentation; and, Consult with client users concerning maintenance of software systems. Must have a Bachelor's Degree, or foreign equiv., and six (6) years in the job offered, or 6 years exp. as a Software Dev./Programmer/Analyst/DBase Admin, or related, or any suit. combo of ed., trng and exp., or related. Hrs: 9a-5p, M-F, $63,00 to $75,000 per yr. Send resume to Chris Carroll, CLOSE & Associates, 5955 Shiloh Road, East, Suite 208, Alpharetta, GA 30005. Ref. #JJ0001.

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Legato Stock Price Plummets on Audit

Restates reports; excludes revenue not yet received

BY MATT HAMBLEN

STORAGE MANAGEMENT software maker Legato Systems Inc. [Nasdaq:LGTO] was recently told by auditors to defer revenue from three contracts, resulting in a disastrous market reaction to its latest quarterly report.

On Jan. 19, Palo Alto, Calif.-based Legato restated results downward for the third quarter of 1999 and then said its fourth-quarter earnings would be 11 cents per share, almost half as much as analysts had predicted.

The news sliced Legato's stock price of $53.62 to $29.88 the next day. At its high last year, the stock was trading at $80.

For the fourth quarter, Legato said revenue was $71 million, an increase of 47% over the same period a year earlier. For all of 1999, Legato reported $251 million, up 55% over 1998 but still below analysts' expectations.

The reductions in the third and fourth quarters were the result of auditors' recommendation that revenue from three contracts worth $19 million be recorded in 2000, when Legato customers could expect payment from the deals, several analysts said.

For example, the largest contract, for $10 million with application service provider StorageNetworks Inc. in Waltham, Mass., was considered by Legato to be irrevocable, so Legato counted it as revenue, according to analyst Mark Fernandes at Merrill Lynch Global Securities in San Francisco.

But independent auditors at PricewaterhouseCoopers in New York said the StorageNetworks' sale was dependent on customers signing up, and Legato should be dependent on that revenue as well only when it actually came in, Fernandes added.

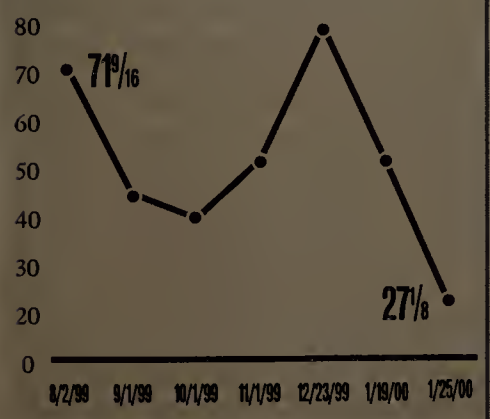
The auditing recommendation "could cascade through the industry and be a watershed event" affecting other companies that sell to application service providers, said Joseph Payne, an analyst at Dallas-based Hoak Breedlove Wesneski & Co.

Shortly after Legato announced the restatement, Ontrack Data International Inc. announced the two companies were canceling Legato's planned acquisition of Ontrack. Joan Dyer, an Ontrack spokeswoman, said only that the merger termination was a "mutual" decision based on the interests of the stockholders and the uncertainty of the situation.

INDUSTRY ALMANAC

Legato Loses Its Footing

Legato saw its stock take a big dip after restating two earnings reports:



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CDN	32.93	9.12	Cadence Design Systems	21.88	-0.06	-0.3
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COGN	62.31	19.37	Cognos Inc.	51.06	-5.69	-10.0
CA	79.43	32.12	Computer Associates Int'l (H)	68.63	-2.13	-3.0
CPWR	40.00	16.37	Compuware Corp.	21.88	-4.69	-17.6
OCTM	66.25	9.37	Documentum	66.25	10.25	18.3
EFII	64.87	32.00	Electronics For Imaging	45.63	-7.38	-13.9
HNCS	130.00	13.75	Hnc Software	93.50	-13.13	-12.3
HYSL	48.50	9.87	Hyperion Software (H)	38.00	-8.88	-18.9
IOXC	49.12	12.43	IOX Systems (H)	37.47	2.34	6.7
INFA	109.37	19.00	Informatica Corp.	100.00	7.63	8.3
IFMX	14.68	6.03	Informix Software Inc. (H)	12.88	-0.19	-1.4
INTU	90.00	22.50	Intuit	58.56	-16.25	-21.7
JKHY	59.00	26.43	Jack Henry Associates (H)	58.44	0.44	0.8
JOEC	43.00	10.87	J.O. Edwards & Co.	30.47	-9.22	-23.2
LGTO	82.50	15.06	Legato Systems Inc.	26.25	-4.44	-14.5
MACR	90.00	28.37	Macromedia Inc. (H)	75.00	-9.63	-11.4
MANU	50.00	5.25	Manugistics Group Inc. (H)	44.50	4.13	10.2
MENT	15.06	7.75	Mentor Graphics	13.50	0.50	3.8
MSFT	119.93	72.00	Microsoft Corp.	98.50	-6.59	-6.3
NETA	57.12	10.06	Network Associates	25.94	-1.81	-6.5
GMH	127.00	44.75	Network General (H)	111.50	-10.88	-8.9
NOVL	42.43	16.06	Novell Inc.	31.06	-5.63	-15.3
ORCL	62.62	10.50	Oracle Corp.	47.69	-12.44	-20.7
PMTC	35.93	11.68	Parametric Technology Corp.	21.25	-0.63	-2.9
PSFT	27.75	11.50	PeopleSoft Inc.	21.75	-4.00	-15.5
PIXR	50.62	33.00	Pixar	35.94	-0.63	-1.7
RATL	61.00	21.87	Rational Software Corp.	54.06	-4.19	-7.2
RHAT	151.31	20.00	Red Hat Inc.	106.69	-8.19	-7.1
QSFT	120.00	20.50	Quest Software	98.00	5.00	5.4
SAP	70.00	23.75	SAP AG (H)	69.63	9.06	15.0
SCUR	27.00	2.25	Secure Computing Corp.	12.94	-2.50	-16.2
SE	44.93	17.93	Sterling Commerce Inc.	26.94	-1.19	-4.2
SSW	32.00	18.12	Sterling Software Inc.	27.88	-0.88	-3.0
SORC	23.43	8.81	Structural Dynamics Research	11.25	-0.19	-1.6
SYBS	23.93	5.31	Sybase Inc. (H)	22.56	-0.56	-2.4
SYMC	69.31	12.50	Symantec Corp.	51.00	-7.81	-13.3
SNPS	75.62	37.12	Synopsis	43.88	-10.88	-19.9
SCTC	20.06	7.81	Systems & Computer Technology	19.25	0.81	4.4
BAANF	17.81	6.75	The Baan Co. N.V.	7.06	-0.31	-4.2
TIBX	195.00	19.75	Tibco Software Inc.	164.50	-9.00	-5.2
TSAI	50.75	20.25	Trans. Sys. Arch.	22.00	-2.75	-11.1
VRTS	181.50	20.37	Veritas Software Corp. (H)	159.88	1.88	1.2
WIND	45.00	11.25	Wind River Systems Inc.	30.50	-7.83	-20.0
TELECOMMUNICATIONS CARRIERS OFF -8.6%						
AT	91.81	56.31	Alltel Corp.	63.25	-16.75	-20.9
ANDW	25.50	11.00	Andrew Corp.	23.31	-1.19	-4.8
T	63.43	41.50	AT&T	49.88	-2.31	-4.4
BCE	108.56	38.31	BCE Inc. (H)	100.19	4.50	4.7
BEL	69.50	50.62	Bell Atlantic	58.00	-3.00	-4.9
BLS	51.37	39.75	Bell South	43.88	-2.50	-5.4
BRW	41.06	16.31	Cincinnati Bell Inc.	39.50	1.75	4.6
CMCSK	57.68	29.00	Comcast	46.50	-6.44	-12.2
CQ	37.06	15.37	Comsat Corp.	17.13	-2.31	-11.9
COX	58.37	32.00	Cox Communications Inc. (H)	51.63	-3.38	-6.1
GSTRF	53.75	12.62	Globalstar Telecom. Ltd.	32.19	-12.00	-27.2
GTE	78.50	57.00	GTE Corp.	68.38	-2.75	-3.9
NXTL	132.62	27.43	Nextel Communications	109.06	-11.31	-9.4
SPOT	74.25	26.37	Panamsat	52.19	-8.44	-13.9
QCOM	120.00	0.00	Qualcomm (L)	108.00	-50.03	-31.7
SBC	59.87	38.56	SBC Communications (L)	40.00	-3.19	-7.4
FON	75.93	38.62	Sprint Corp.	59.75	-2.56	-4.1
TOS	137.00	48.62	Telephone and Data Systems	107.25	-13.75	-11.4
USW	73.00	51.50	US West	66.13	-2.38	-3.5
VIA	61.87	36.68	Viacom	55.13	-2.69	-4.6
WCII	82.87	28.50	Winstar Communications Inc.	70.13	-8.25	-10.5
WCOM	64.56	40.62	MCI Worldcom Inc. (L)	41.25	-0.13	-0.3
SERVICES OFF -7.6%						
ACXM	30.62	14.56	Acxiom Corp.	25.19	-2.06	-7.6
ACS	53.00	31.75	Affiliated Computer Servs	41.19	-6.63	-13.9
AMSY	37.68	19.75	American Mgt. Systems	32.25	0.06	0.2
AUD	54.81	20.87	Automatic Data Processing	48.75	-2.00	-3.9
BSYS	69.00	41.37	Bisys Group Inc.	58.06	-6.44	-10.0
CATP	32.25	10.62	Cambridge Technology Ptnrs	20.88	-2.13	-9.2
CEN	40.50	15.75	Ceridian (L)	16.25	-0.75	-4.4
CBR	29.81	13.75	Ciber Inc.	23.19	-3.50	-13.1
COD	43.00	10.75	Comdisco	33.31	-4.44	-11.8
CHRZ	21.00	9.25	Computer Horizons Corp.	14.13	-1.13	-7.4
CSC	94.93	52.37	Computer Sciences	89.56	-1.31	-1.4
OST	76.43	50.93	Ost Systems Inc.	64.19	-5.69	-8.1
EDS	76.06	44.12	Electronic Data Systems (H)	68.50	-3.88	-5.4
FDC	50.00	0.00	First Data Group	50.00	0.13	0.3
FISV	40.75	24.12	Fiserv	33.00	-3.69	-10.1
IT	25.75	9.56	Gartner Group	15.88	-1.13	-6.6
KEA	35.00	17.25	Keane	28.00	0.44	1.6
NDC	55.25	21.75	National Data	32.38	0.56	1.7
PAYX	47.87	23.56	Paychex Inc.	43.00	-3.44	-7.4
PER	85.75	15.31	Perot Systems Corp.	21.19	-2.75	-11.5
REGI	9.75	2.68	Renaissance Worldwide	7.13	-0.88	-10.9
REY	25.31	17.31	Reynolds & Reynolds	21.69	-1.13	-4.9
SFE	191.00	35.75	Safegard Scientifics	142.94	-22.56	-13.6
SAPE	151.18	19.00	Sapient Corp.	93.00	-37.75	-28.9
SMS	73.50	35.50	Shared Medical Systems	44.38	-4.88	-9.9
SDS	41.93	16.87	Sungard Data Systems	28.38	-2.31	-7.5
SYNT	20.93	7.00	Syntel Inc. (H)	15.94	-0.81	-4.9
TECD	44.68	14.50	Tech Data	22.88	-1.94	-7.8
TENF	52.50	17.00	TenFold Corp.	42.50	-6.50	-13.3
TSS	26.00	14.12	Total System Services Inc.	16.75	1.19	7.6
TSAI	50.75	20.25	Transaction Sys. Architects	22.00	-2.75	-11.1
NETWORK UP 1.7%						
COMS	53.75	20.00	3Com Corp.	46.88	-3.19	-6.4
AOCT	76.37	34.37	AOC Telecommunications Inc.	64.75	-10.19	-13.6
ANTC	60.25	18.82	Antec	38.31	-0.31	-0.8
BNYN	25.68	8.25	Banyan Systems Inc. (H)	23.81	2.31	10.8
CS	30.00	7.18	Cabletron Systems	26.69	-1.31	-4.7
CNEBF	9.75	2.87	Catl-Net Enterprises	4.25	-0.13	-2.9
CSCO	115.75	45.81	Cisco Systems Inc. (H)	104.91	-10.03	-8.7
ECIL	45.00	23.75	ECI Telecom	27.00	-9.00	-25.0
ENTU	70.62	16.87	Entrust Technologies Inc.	50.00	-4.19	-7.7
HRS	40.62	18.25	Harris Corp.	29.88	1.13	3.9
GMH	127.00	44.75	Hughes Electronics/GM (H)	111.50	-10.88	-8.9
ERICY	70.81	20.50	LM Ericsson (H)	70.81	4.44	8.7

EXCH	52-WEEK		RANGE	JAN. 28 2PM	WK NET CHANGE	WK PCT CHANGE
JNPR	150.15	30.12	Juniper Networks Inc. (H)	141.25	6.00	4.4
LU	84.18	47.00	Lucent Technologies	55.44	3.00	5.7
MADGF	15.43	1.43	Madge Networks (H)	12.88	4.88	60.9
NCOI	9.00	3.87	Network Computing Dev	6.25	0.56	8.3
NWK	14.81	7.31	Network Equipment Tech	9.44	-0.06	-0.7
NN	39.50	14.00	Newbridge Networks	28.50	4.38	18.1
NOK	198.50	62.31	Nokia Corp	180.44	-2.00	-1.1
NT	110.06	26.93	Northern Telecom Ltd.	93.13	-10.06	-9.8
PAIR	18.56	7.93	Pairgain Technologies Inc.	12.00	-1.63	-11.9
PCTL	11.00	3.25	Picturetel	6.97	1.41	25.3
SFA	83.62	24.50	Scientific Atlanta (H)	78.75	9.69	14.0
TLAB	77.25	35.87	Tellabs Inc.	56.00	-13.50	-19.4
USW	73.00	51.50	US West	66.13	-2.38	-3.5
VRLK	8.93	1.81	Verilink (H)	7.13	0.75	11.8
WSTL	22.37	3.81	Westell Technology Inc. (H)	18.94	2.75	17.0
SEMICONDUCTORS, CHIPS & EQUIPMENT OFF -6.6%						
AOPT	63.56	19.00	Adaptec	52.00	4.56	-8.1
AMD	45.12	14.56	Advanced Micro Devices	35.88	-1.75	-4.7
ALTR	73.06	23.93	Altera (H)	65.13	-6.56	-9.2
ADI	105.25	24.37	Analog Devices (H)	95.00	-2.50	-2.6
AMAT	146.62	48.43	Applied Materials (H)	129.69	-11.69	-8.3
ASML	144.00	36.37	ASM Lithography Holding (H)	118.38	-23.31	-16.5
FCS	35.13	0.00	Fairchild Semiconductor Corp.	33.50	-0.75	-2.2
HRS	40.62	18.25	Harris Corp.	29.88	1.13	3.9
INTC	106.62	50.12	Intel Corp.	94.44	-2.75	-2.8
KLAC	69.87	21.18	Kla Instruments	57.13	-7.56	-11.7
LLTC	99.68	41.75	Linear Technology	90.81	0.81	0.9
LSI	86.43	22.75	LSI Logic (H)	77.50	-5.19	-6.3
MXIM	54.75	19.93	Maxim Integrated Products	50.00	0.06	0.1
MU	85.00	34.25	Micron Technology	62.25	-5.19	-7.7
MOT	154.12	12.31	Motorola (L)	133.19	-13.81	-9.4
NSM	54.18	8.87	National Semiconductor (H)	52.63	3.75	7.7
STM	174.00	40.25	SGS-Thomson Microelec. (H)	164.38	-4.88	-2.9
SLR	98.00	37.25	Solectron Corp.	70.63	-8.56	-10.8
TER	78.25	21.81	Teradyne	63.63	-10.31	-13.9
TXN	117.50	43.00	Texas Instruments (H)	107.75	-6.13	-5.4
JOSU	248.50	18.75	Uniphase (H)	199.88	-37.75	-15.9
VTSS	58.00	20.37	Vitesse Semiconductor Corp	42.38	-10.66	-20.1
XLNX	50.00	16.43	Xilinx	44.25	-3.38	-7.1
COMPUTER SYSTEMS OFF -5.8%						
AAPL	121.50	32.00	Apple Computer Inc.	104.50	-7.63	-6.8
ASPX	15.25	3.87	Auspex Systems	6.94	-0.88	-11.2
BEOS	39.56	3.28	Be Inc.	13.75	-0.56	-3.9
CPQ	51.25	18.00	Compaq	28.19	-3.44	-10.9
DELL	55.00	31.37	Dell Computer Corp.	37.75	-6.69	-15.0
GTW	84.00	28.37	Gateway 2000 Inc.	60.19	-2.75	-4.4
HWP	118.87	63.37	Hewlett-Packard Co.	108.94	-5.19	-4.5
HIT	164.50	59.93	Hitachi Ltd.	144.81	-3.88	-2.6
IBM	139.18	80.87	IBM	111.44	-11.00	-9.0
MUEI	16.50	9.00	Micron	10.94	-1.25	-10.3
MOT	154.12	12.31	Motorola (L)	133.19	-13.81	-9.4
NATI	42.93	17.18	National Instruments Corp. (H)	38.00	-2.13	-5.3
NCR	54.56	26.68	NCR	40.00	1.88	4.9
NIPNY	125.00	43.62	NEC	110.00	5.00	4.8
PRCM	38.25	3.43	Procom Tech Inc.	27.75	-1.06	-3.7
SGI	20.87	6.87	Silicon Graphics Inc. (L)	10.06	-0.63	-5.8
SNE	295.87	70.25	Sony	244.69	13.19	5.7
SUNW	87.93	23.12	Sun Microsystems	76.38	-8.75	-10.3
TRCO	7.25	1.53	Tricord Systems	4.94	-0.69	-12.2
UIS	49.68	20.93	Unisys	31.44	-2.31	-6.9
INTERNET OFF -6.3%						
AMZN	113.00	41.00	Amazon.com	61.31	-2.81	-4.4
AOL	96.00	31.25	America Online	59.44	-5.88	-9.0
ATHM	99.00	33.12	@home Corp.	36.69	-4.44	-10.8
CKFR	107.50	23.12	Checkfree	61.13	-29.75	-32.7
CYCH	24.00	6.68	Cybercash Inc.	9.34	0.09	1.0
EBAY	234.00	63.93	eBay Inc.	148.94	-6.44	-4.1
ETYS	86.00	16.13	eToys Inc. (L)	16.13	-4.88	-23.2
EGRP	72.25	17.62	ETrade Group Inc.	22.63	-1.31	5.5
LCOS	93.62	28.56	Lycos Inc.	74.25	-3.25	-4.2
OMKT	56.18	11.18	Open Market Inc. (H)	51.75	4.63	9.8
OTEX	42.50	9.50	Open Text Corp	20.66	1.28	6.6
PCLN	165.00	45.50	Priceline.com Inc.	60.00	-4.06	-6.3
PRGY	50.62	14.00	Prodigy Communications	20.13	0.50	2.5
PSIX	107.18	30.12	PSINet Inc. (H)	82.25	-14.50	-15.0
RSAS	80.00	14.25	Security Dynamics	57.88	-10.13	-14.9
SPYG	56.87	8.62	Spyglass Inc.	37.56	-4.25	-10.2
WINK	65.75	21.75	Wink Communications Inc.	61.00	8.50	16.2
YHOO	500.12	110.00	Yahoo Inc.	323.63	-34.88	-9.7
STORAGE & PERIPHERALS OFF -4.1%						
ADPT	83.56	19.00	Adaptec Inc.	52.00	-4.56	8.1
APCC	29.37	13.12	American Power Conversion	27.06	-1.18	4.1
CANNY	41.50	19.75	Canon Inc.	41.50	5.38	14.9
DBD	35.43	19.68	Diebold Inc.	22.06	-1.56	-6.6
EK	79.81	56.62	Eastman Kodak Co.	62.44	1.44	2.4
EMC	122.50	46.93	EMC (H)	104.06	-16.69	-13.8
IOM	7.43	2.87	Iomega	4.25	-0.94	18.1
MXTR	17.87	4.25	Maxtor Corp.	7.44	-0.88	10.5
NTAP	121.50	19.06	Network Applinace Inc (H)	101.75	-18.50	15.4
LXK	104.00	42.06	Lexmark International Group Nc.	95.88	15.13	18.7
SEG	48.81	25.12	Seagate Technology	41.50	0.00	0.0
STK	41.62	14.25	Storage Technology	15.31	-2.38	13.4
TEK	42.81	17.56	Tektronix	40.38	1.13	2.9
XRX	63.93	19.00	Xerox	20.88	-1.25	-5.6

KEY: **(H)** = New annual high reached in period
(L) = New annual low reached in period

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How to Contact Computerworld

TELEPHONE/FAX

Main phone number (508) 879-0700
All editors unless otherwise noted below
Main fax number (508) 875-8931
24-hour news tip line (508) 820-8555

E-MAIL

Our Web address is **www.computerworld.com.** All staff members can be reached via e-mail on the Internet using the form: **firstname_lastname@computerworld.com.**

All IDG News Service correspondents can be reached using the form: **firstname_lastname@idg.com.**

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to: **letters@computerworld.com.** *Include your address and telephone number.*

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701

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Subscription rates: U.S., $48/year; Canada, $110/year; Central and South America, $150/year (surface); all others, $295/year

Phone (800) 552-4431
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Back Issues (508) 820-8167

REPRINTS/PERMISSIONS

Phone Ray Trynovich (717) 399-1900, ext. 124
E-mail rtry@rmsreprints.com

CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

Editor in Chief Maryfran Johnson (506) 820-8179
Editorial Director, Print/Online Patricia Keefe (508) 820-8163

DEPARTMENT EDITORS

News Editors Michael Goldberg (508) 620-7789, Anne McCrory (508) 820-8205, Sharon Machlis (508) 820-8231
Business Editor Kevin Fogarty (506) 820-8246
Technology Editor Robert L. Scheier (508) 820-8226
Washington Bureau Chief Mitch Betts (202) 347-6718
West Coast Bureau Chief Mark Hall (650) 524-7110
Assistant Sections Editor Amy Malloy (508) 620-7754

REPORTERS

E-commerce, travel industry Stacy Collett (703) 404-1409
Internetworking, telecom, defense and aerospace James Cope (219) 273-5369
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Careers, labor issues, outsourcing, application service providers, health care Julekha Dash (804) 295-9512
Microsoft operating systems, BackOffice, Novell, food processors/suppliers Dominique Deckmyn (650) 524-7112
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Microsoft, investigative reports Kim S. Nash (773) 275-4133
General assignment, storage Kathleen Dhlson (508) 820-8215
Java, intranets, e-commerce technologies, retailers, pharmaceutical industry Carol Sliwa (508) 628-4731
Databases and Unix operating systems Robin A. Robinson (E-mail: robin.robinson@computerworld.com)
General assignment Linda Rosencrance (508) 628-4734
ERP, client/server software, Unix applications, process manufacturing Craig Stedman (508) 820-8120
State/federal government, antitrust, legal issues, politics Patrick Thibodeau (202) 333-2448
Large systems/high-end Web server technology, hardware, heavy manufacturing Jaikumar Vijayan (506) 820-8220

OPINIONS

Staff Columnist Frank Hayes (503) 252-0100
Columns Editor Rick Saia (508) 820-8118

FEATURES EDITORS

IT management, year 2000 Rick Saia (508) 820-8118
Reviews Russell Kay (508) 820-8175
Field Report, reviews, Emerging Companies Cynthia Morgan (508) 820-8177
IT Careers David B. Weldon (508) 820-8186

FEATURES WRITERS

Gary H. Anthes (202) 347-0134; Matt Hamblen (508) 820-8567; Julia King (610) 532-7599; Kathleen Melymuka (508) 628-4931; Mathew Schwartz (508) 820-8285; Steve Ulfelder (508) 620-7745

RESEARCH

Lorraine Cosgrove, **research director**; Mari Keefe, **editorial research specialist**; Lisa Sydney, **online researcher**; Allison Wright, **editorial research intern**; Rayna Meleedy, **graphics coordinator**

COPY DESK

Jamie Eckle, **managing editor/production** (508) 820-8202; Jean Consilvio, **assistant managing editor/production**; Pat Hyde, **assistant managing editor/special projects**; Jacqueline Day, Eugene Demaitre, Michele Lee, Bob Rawson, Julie Walsh, **copy editors**

GRAPHIC DESIGN

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COMPUTERWORLD ONLINE

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CONTRIBUTING COLUMNISTS

Joe Auer, Jim Champy, Michael Cusumano, John Gantz, Dan Gillmor, Peter G. W. Keen, Bill Laberis, David Moschella, Fran Quittel, Paul A. Strassmann, Don Tapscott, Ed Yourdon

CONTRIBUTING WRITERS

Leslie Goff, Amy Helen Johnson, Deborah Radcliff

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Integrate

your old," said Seema Williams, an analyst at Forrester Research Inc. in Cambridge, Mass.

Built separately or spun off to convey a hipper image, lure venture capital dollars or operate outside corporate bureaucracy, dot-coms and bricks haven't always mixed when it comes to doing business in both places.

Borders Group Inc. is piloting "Title Sleuth" kiosks in three of its Michigan stores to help customers locate books. But if the book's not in the store, a shopper can't order it through the kiosk. Nor can an Internet buyer check to see if a book is in the shopper's local store.

Meanwhile, Nordstrom.com, launched in October 1998, runs independently from its 99-year-old brick-and-mortar counterpart. But managers at the dot-com now see huge opportunities ahead if it could link to Nordstrom Inc.'s inventory systems.

Many companies, including Nordstrom, had the forethought to integrate portions of their operations that made sense. NeimanMarcus.com, which waited until last fall to launch its online operation, had information technology staffers integrate legacy systems with its order fulfillment operation. But the dot-com is

NORDSTROM.-COM'S Bob Schwartz is "buying into the promise of XML" to aid with data exchange

forging a separate online team for some front-end technical systems, merchandising and creative aspects.

Borders expanded its Nashville fulfillment center to handle both online purchases and in-store special orders. The online and in-store operations share the same financial department, some customer service representatives and veteran IT staffers.

But a separate IT staff handles the Web site's front end. And the marketing, merchandising and content creation staffs are separate because they need employees with special expertise, said Borders senior vice president Mary Jean Raab.

Well-integrated companies are the exception, according to Carol Ferrara, a retail analyst at Gartner Group Inc. in Stamford, Conn. Ferrara estimated that 75% or more haven't integrated channels.

"I've talked to a huge number of retail clients who are now in a quandary because they have two separate organizations, two separate IT departments, two separate managing teams and new partners and alliances as part of their dot-com company," she said.

"We'll start to see some vendors who try to alleviate the pain," Ferrara said. "But I think it's going to be a very slow process. A lot of the work will be custom."

DrugEmporium, for instance, has two distinct systems. DrugEmporium.com built an Oracle Corp.-based e-commerce site because it needed a database-driven system to handle its 20,000 SKUs. It also settled on Oracle's back-office applications for easier integration. But its parent company, Drug Emporium Inc. runs J. D. Edwards & Co. financials and homegrown back-office systems, said Jim Schanzenbach, chief technology officer at DrugEmporium.com.

Challenge in Store

Strategically, there are no plans to integrate now, but if they ever want to merge systems, they face a challenge. "If we integrate operations, the smart thing to do would be to move the corporate environment to the system we have here. It's more state of the art," said Schanzenbach.

At Nordstrom.com, Executive Vice President Robert Schwartz said he would like to enable online customers to locate special items available in stores that aren't stocked at the company's pick, pack and ship facility in Cedar Rapids, Iowa.

"For instance, high-fashion items today are something you don't want to over-inventory, because as you go up in fashion, the propensity to buy without trying it on goes down," Schwartz said. "But our customers want it, so we should facilitate that."

But Schwartz said he has to wait for the brick-and-mortar Nordstrom operation to build a new, sophisticated inventory management system.

Another potential challenge could be disparate operating environments. Nordstrom.com has Microsoft Corp. technology at its core, while its counterpart is a heavy IBM user.

Schwartz said the company is "buying into the promise of XML" to aid with data exchange across any platform. But some analysts warn that XML could create a lot of work producing data definitions. ◗

Sun in Deal to Tie Stores to Web Sites

Sun Microsystems Inc. and start-up Found.com Inc. joined forces last week in a deal they said would make it easier to integrate Web storefronts with their existing brick-and-mortar counterparts.

Sun and Found.com will help brick-and-mortar companies add functionality to their existing Web sites that will let customers search for products at a physical retail store in a specific geography, verify real-time availability of the product and purchase it online at the store level.

For instance, a consumer looking to purchase a pair of jeans from a brand-name retailer will be able to go to the retailer's Web site, drill down to see what inventory is available at a local store and purchase the product. Options will be available that let the consumer pick up the item at a convenient time or have it shipped home.

The option adds flexibility to the online purchase and return processes and gives traditional brick-and-mortar stores a way to participate in Web-based sales, said Richard F. Lawson, president and CEO of Found.com.

"The idea is to provide an integrated experience for the consumer so that whether they buy via brick-and-mortar stores, mail order, telephone sales or the Internet, the company has a common customer database," said Scott Latham, an analyst at AMR Research Inc. in Boston.

This kind of integration is "something that companies are realizing they are going to have to do" as online purchasing becomes more popular, Latham said.

Providing the core functionality for the joint offering is Found.com's Vertically Segmented Search Technology, which the company describes as blending Internet search technology and middleware, pulls inventory and pricing data from a store's point of sale system and feeds it to a central database. Users can access the database via the Internet.

The technology will be jointly marketed by the two companies and deployed on Sun servers. The deal also calls for Found.com to buy $20 million worth of Sun hardware, software, storage and middleware. All brick-and-mortar retailers and manufacturers that want to implement the technology will need to install Sun's Netra Unix servers at each physical store location. – *Jaikumar Vijayan*

Telecommuters Exempt From OSHA Rules

But employers remain liable for some injuries

BY LINDA ROSENCRANCE

Employers aren't responsible for the health and safety of white-collar telecommuters after all, U.S. Department of Labor officials said last week.

But employers are still liable for any health and safety violations experienced by workers who engage in hazardous manufacturing jobs at home, according to a spokesman for the U.S. Occupational Safety and Health Administration (OSHA).

OSHA's Carl Fillichio confirmed published reports regarding testimony given last week to the Senate Health, Education, Labor and Pensions Committee by Charles Jeffress, assistant secretary of Labor. The agency's latest position contradicts a "letter of interpretation" issued in November to CSC Credit Services in Houston. That letter said all companies that allow employees to work at home are responsible for injuries suffered by those workers.

However, OSHA swiftly withdrew its interpretation — a reaffirmation of the 1970 Occupational Safety and Health Act — after an uproar from employers and some members of Congress who said the interpretation could signal the beginning of the end of the work-at-home era for hundreds of companies, including technology firms.

This current position will be taken into account in any future work-at-home regulations, Jeffress said.

Also, OSHA's proposed ergonomics standards will most likely incorporate a distinction between white-collar telecommuters and blue-collar employees engaged in hazardous manufacturing at home.

The ergonomics standards, which are opposed by many businesses, would hold employers responsible for repetitive-strain injuries suffered by workers in the office.

Jeffress' statements about the white-collar exemption were confusing to at least one member of the Center for Office Technology, an Alexandria, Va.-based trade group for computer equipment makers.

"I find it interesting that OSHA has exempted teleworkers and left in people who work in dangerous jobs," said Sherry Saunders, a spokeswoman for the center. "Is keyboarding at the office more dangerous than keyboarding at home?" ◗

Periodical postage paid at Framingham, Mass., and other mailing offices. Posted under Canadian International Publication agreement #0385697. CANADIAN POSTMASTER: Please return undeliverable copy to PO Box 1632, Windsor, ON N9A 7C9 Computerworld (ISSN 0010-4841) is published weekly except a single combined issue for the last week in December and the first week in January by Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Copyright 2000 by Computerworld Inc. All rights reserved. Computerworld can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N Zeeb Road, Ann Arbor, Mich. 48106. Computerworld is indexed. Back issues, if available, may be purchased from the circulation department. Photocopy rights permission to photocopy for internal or personal use is granted by Computerworld, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress St., Salem, Mass. 01970. Reprints (minimum 100 copies) and permission to reprint may be purchased from Ray Trynovich, Computerworld Reprints, c/o Reprint Management Services, Greenfield Corporate Center, 1811 Olde Homestead Lane, Lancaster, Pa., 17601, (717) 399-1900, ext 124 Fax: (717) 399-8900. Web site: www.rmsreprints.com. E-mail: rtry@rmsreprints.com. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $4 a copy; U.S – $48 a year; Canada – $110 a year, Central & So. America $150 (surface) a year; Europe – $295 a year; all other countries – $295 a year. Subscriptions call toll free (800) 552-4431. POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Box 2044, Marion, Ohio 43305.

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FRANK HAYES/FRANKLY SPEAKING

Hell hath no fury . . .

CALL IT the screen from hell. Your users do. They dread that screen. But they can't avoid it — it's in an application they use every day, or even all day long. Maybe they have to copy information off the screen with pen and paper, then type it in again. Maybe they have to back up two screens if they mistype anything. Maybe if they accidentally tab past a field, they have to start all over again. What's certain is that it's the kludgiest, most user-hostile screen they deal with, and it's been on their fix-this request list to IT for years.

But it doesn't get fixed, because the screen from hell is just as ugly, kludgy and dread-inducing to programmers as it is to users.

Your developers can't just patch it up — that's how screens from hell come to be, from an endless series of hacks and quick fixes that result in an awful, unmaintainable mess.

No, they'd have to replace it, unscrambling and recreating all the complex, jerry-built business logic that has evolved through all those years, matching the function of all the weird kludges and patches that someone once needed to get all the right data from all the right sources onto that hellish screen.

And that will be painful, expensive — and risky. Maybe it can't be done. If you fail or get it wrong, users will blame IT. And all this is for one lousy screen, so it will never look like it's worth the trouble, misery and risk.

No wonder you've dodged it all these years. And no wonder users hate you for it.

Can you ever get rid of the screen from hell? Maybe, if you're willing to put those long-suffering users at the center of the effort to fix it. Doing that could dramatically improve the chance the project will succeed — and cover your IT shop's backside in case it doesn't.

Start by getting the users to cost-justify the fix. If this really is a screen from hell, it's costing users in time, effort and work quality. Get them to estimate that cost — it's your payback from this project. (If higher-ups refuse to OK the project because the payback isn't good enough, you're off the hook — the bosses simply aren't letting you solve the problem.)

Once the project gets a green light, get the users to pick a pilot group. That group's first job: deciding on the absolute minimum functionality they can live with in the first version. Promise you'll squeeze in everything in the end. But for now, you need a first step. Make them define it.

Then make them define the rest of the project's road map, one new feature at a time. They know which capabilities they need early and what they can live without. (And if they leave out something crucial or waste time on nonessentials, you're off the hook — *they* screwed up, not you. See a pattern here?)

Can you ever get rid of the screen from hell? Maybe.

Now your developers can go to work. Building the simplified first-pass screen will be a lot easier than trying to reinvent that whole hellish wheel. As soon as the pilot users approve it, you can add the next feature on the road map. And the next.

Each new feature means a new point release. Each point release must be production quality — and get the users' OK before you go on. That way if someone pulls the project's plug, at least users will get *something* out of it. (And if it's buggy — hey, they OK'd it, right?)

If developers design it right, stick to the road map and get feedback continuously, the new less-than-hellish screen just might work.

If it *doesn't* work, well, you're still better off than before. Users will understand why they're stuck with that screen from hell. And you may discover that working with those users is just a little less hellish next time around. ◗

Hayes, Computerworld's staff columnist, has covered IT for more than 20 years. His e-mail address is frank_hayes@computerworld.com.

SHARK TANK

SO THE CIO at a start-up meets the new CEO. Who offhandedly says he's moving headquarters 2,000 miles. And probably closing the existing office. CIO: "OK, I'll freeze hiring." CEO: "Why?" CIO: "I don't want to bring friends into this environment." CEO: "Why?" CIO: "Because you're moving the company and we might be out of a job in 60 days." Pause. CEO: "So hire nonfriends."

***BECAUSE SOMETHING** is happening here/But you don't know what it is/Do you, Mister Jones?* Sharky Dylan hears that research outfit International Data Corp. will shortly release a study. Finding: Linux server licenses are flat-out exploding. Try 24.8% market share among Intel servers. Blood on the tracks in NT land?

IT HEADHUNTERS spin some odious (and odoriferous) yarns. "I had a software engineer show up in my office with his 3-year-old, who had a case of diarrhea and a leaky diaper," a pilot fish says. Shudder. "He eventually worked on assignments at two of our customers. Got rave reviews." (The engineer, not the 3-year-old.)

WE HAVE A WINNAH in the Y2K Layoff Derby. "I have a friend who worked in the IS department for [a local government]," a pilot fish writes. "Last spring, she came in on the weekend and installed her Y2K fixes. They must have been confident in her abilities, because they laid her off the next Friday." Spring '99! Can anybody top that?

YOU CAN'T BLAME Sergey Kaplin, a Y2K type in the Russian Army, for getting cranky. "I'm sure we are all painfully aware of how bad things were supposed to go in the Russian Federation," Kaplin bristled at a recent powwow. "None of the negative forecasts came close." Nobody's happier than Kaplin, who spent the rollover at the Colorado Springs Center for Y2K Strategic Stability. His job: Make sure Russia didn't lob ICBMs at the U.S. Another happy Y2K customer.

Speaking of lobbing bombs, Sharky's taking St. Louis and giving the seven. Hero? Chump? By the time you read this, you'll know. Make me a winner: **sharky@computerworld.com**. For the daily scoop: *computerworld.com/sharky*. Published dirt gets a nifty shirt.

The 5th Wave

E-mail richtennant@the5thwave.com

"Right here... crimeorg.com. It says the well-run small criminal concern should have no more than nine goons, six henchmen and four stooges. Right now, I think we're goon-heavy."

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